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BACON AND SCIENCE.

THERE is a widely prevalent belief that Lord Bacon was the originator of inductive philosophy—the father of the modern scientific method. This idea is so generally entertained that to many it will appear like paradox to question it. We have been told again and again that it was as followers of the Baconian method that Pascal and Torricelli determined the properties of air; that Newton was a disciple of Bacon and was directed by Baconian hints when he quarried from out the unknown the grand law of gravitation. "Nurtured in Bacon's school," says a modern enthusiast, "Boyle transformed hydrostatics from a loose assemblage of facts into a deductive science; Watt constructed the steam-engine, which has annihilated space and economised the labour of millions, and Franklin rivalled the glories of the ancient Prometheus in snatching the electric fire from heaven."

In reality, the influence of Bacon in starting and guiding modern science is little better than a myth. The common opinion on the subject justifies the old saying, *Communis opinio communis error*. No competent student of science acquainted with Bacon's own promises and anticipations regarding his method has ever adopted this error, though many students of science unacquainted with Bacon's works imagine that he really originated the modern scientific method, and all such students of Bacon's works as have little knowledge of the history of scientific research imagine that the inductive method he devised and described is the method which Pascal and Newton, Watt, the Herschels, Laplace, Darwin, and other great leaders of science have followed in effecting the discoveries which have made their names illustrious.

The world owes much to Bacon, but not this. Science owes not a little to him, but assuredly not her method. It can be more certainly shown that Bacon was not the inventor of the modern scientific method than that he was not the author of the plays attributed to Shakespeare—and this, in my opinion, is saying a great deal. But if this should by some be thought little, then I will use another comparison, and say it is as certain that Bacon was not the father of modern science as that he—Ptolemaist as he was to the backbone—was not the discoverer of the Copernican theory, the earliest product of the modern method, published to the world seventeen years before he was born.

The most striking proof of the essential difference between Bacon's method and the actual method of scientific inquiries is the marked failure of Bacon's anticipations in regard to what his method was to effect. Said Bacon (I follow Spedding's translation): "The course I propose for the discovery of sciences is such as leaves but little to the acuteness and strength of wits, but places all wits and understandings nearly on a level. . . . For my way of discovering sciences . . . performs everything by the surest rules and demonstrations." Assuredly no such levelling of wits as Bacon anticipated has come about. No small mind has accomplished great results by his method—nor, indeed, any great mind either.

What, then, was Bacon's method? and what is the method of all true science, alike in ancient and modern times?

There can be no knowledge of nature without observation and experiment. That is the golden rule of science. Had Bacon discovered and announced that, first of all men, to the world, he would assuredly have deserved all that has been said of him by men either not knowing what he actually said or how science has actually advanced. Had that been the blow by which Aristotelian methods were attacked, Bacon would have justly been regarded as one who had overthrown a false system of philosophy by a well-delivered and most effective stroke. But it was not Bacon who enunciated first, still less was it he who first recognised, that golden rule. Recognised we know not how far back—but Chaldean astronomers and Egyptian architects must have had a very clear idea of it ages before the law was enunciated—it was insisted upon by no other than Aristotle himself.

Because Bacon attacked Aristotle's system of logic, and did much to diminish its influence in the schools, it is commonly understood that he overthrew the Aristotelian philosophy. As a matter of fact, Bacon was in error even in attacking the Aristotelian syllogistic system. In so doing he forgot the sound principle, *Abusus non tollit usum* (or, as Guy Mannering translates it, "the abuse of anything doth not abrogate the lawful use thereof"). He fell into special error in denying the use of the syllogistic method in regard to the system of inductive inquiry which he advocated, the effective application of which must depend absolutely on the very method Bacon scorned.

There can be no knowledge of nature until all possible observations and experiments have been made—this, though not in so many words, was the principle on which Bacon insisted. You must have all your facts, and sort them all into their several compartments. Then will the true theory be recognised by its agreement with all known facts, either absolutely or relatively, according to its different details and the bearing of the various orders of facts upon them. As certainly as the true key to a complicated lock may be recognised by its correspondence with all the wards when you have taken the lock to pieces and carefully compared each part, ward by ward, with the key, so surely can the one only true explanation of the facts relating to a subject of inquiry be recognised when you have examined the subject in all possible lights and compared all the facts, detail by detail, with the theory. All possible positive instances and negative instances, as well as instances partially positive and partially negative in greater or less degree (no less than twenty-seven classes or instances were indicated by Bacon), must be collected and compared with each admissible theory; then will the true theory show itself—to the levelling of unequal wits, as well as to the advancement of scientific learning.

The method has not only *not* brought unequal wits to a common level, it has never enabled any man, let his genius be ever so great, to arrive at truth. Not one discovery in science has ever been made by this method. No student of science familiar with the complication of details existing in all the problems of nature, even in some which appear the simplest, would ever have thought of suggesting the inductive method as recommended by Bacon. No student of

science has ever even begun to apply the true Baconian method—unless, indeed, we consider Bacon himself as one who tried the method, laying himself open to the well-merited stroke of the great deductive (or rather, deductively inductive) philosopher Harvey, who said to him: "Bacon writes philosophy like a Lord Chancellor." Any one who wishes to see what utter nonsense may be deduced by one attempting to apply the true Baconian method of induction should read Bacon's discussion of heat in the second book of the "Novum Organum." The gathering of instances is full of mistakes such as even in his day should have been impossible; their classification and comparison introduces the wildest and most fanciful notions: the "vintage" is worthy of the bad fruit and the poor classification. After thirty or forty closely printed pages of misapprehended facts and delusive reasoning, Bacon arrives at this noteworthy conclusion:—

"Heat is an expansive motion restrained, and striving to exert itself in the smaller particles: the expansion is modified by its tendency to rise, through expanding towards the exterior, and the effort is modified by its not being sluggish, but active and somewhat violent."

Of course, those who can find Harvey's discovery of the circulation of the blood and the Copernican theory of the solar system in Shakespeare may very well imagine that Bacon's definition of heat as an "expansive motion restrained" was a splendid anticipation of the modern theory that "heat is a mode of motion." In reality the modern theory of heat would be just as certainly and absolutely negatived if Bacon's imagined facts were real ones, or if his definition of heat as above quoted were sound, as the Copernican theory would be negatived if the ideas expressed by Ulysses in "Troilus and Cressida" were just, and as the circulation of the blood would be disproved if the account of the office of the blood given by Menenius Agrippa in the first scene of "Coriolanus" were correct. The poor "vintage" resulting from Bacon's discussion of heat is as much like the theory based on the researches of Ampère, Laplace, Mayer, Magnus, Joule, Rumford, and the rest, as bad vinegar is like the best Burgundy, or the dregs of a bottle of British "gooseberry" like a freshly poured glass of Veuve Clicquot. Not even the very beginnings of the modern science of heat can be traced in Bacon's definition; the laws of convection, conduction, and radiation of heat are as utterly absent as the more advanced developments of the science — Prevost's theory of exchanges, the laws of specific heat, the kinship between heat, light, electricity, and chemical action, and the like. The very circumstance that the modern theory of heat can be imagined to exist under Bacon's definition is the best proof of the worthlessness of a definition which is so vague that any theory of heat whatever might have been equally well supposed (by the ill-informed) to underlie it.

It may be interesting to compare with Bacon's attempt to employ his own system effectively such scientific discoveries as Newton, Harvey, or Darwin have achieved by that combination of deductive and inductive methods which alone has led to any real progress in science from the days of the science students of Babylon, Egypt, and India to the present time. I take the work of Newton as that which falls most fully within my own range of study, and in dealing with which I can best recognise how much or how little Bacon had to do with the result achieved.

To begin with, note that the discovery of the law of gravity was the culmination of a series of discoveries.

To go no farther back than the time of Copernicus, it is evident that we have in the Copernican theory a necessary predecessor of the theory of gravity. That Copernicus died seventeen years before Bacon was born affords, as I have already suggested, a tolerably clear proof that the Baconian method was not essential to the achievement of great scientific discoveries. *Vixere fortes ante Agamemnona multi*—there were many strong men before Agamemnon, many great thinkers before Newton. The Copernican theory was established by that fruitful combination of deduction and induction to which I have just referred—induction having had a somewhat larger share than usual in the work, since undoubtedly astronomical observations were carried on much longer than they need have been before analysis was applied to the evidence collected and its true meaning deduced. Here was proof, before Bacon described his method, of its worthlessness; for all the multitudinous observations of the planets before Copernicus's time had led only to greater and greater perplexity and confusion worse confounded, "centrics and eccentrics, scribbled o'er cycle and epicycle, orb in orb." But, oddly enough, Bacon himself has shown how valueless his method was by which the mere multiplying of observations was to be trusted for the educing of new truths. For though, as Mr. Ellis (one of the few competent men of science who has ever dealt with Bacon's claims) points out, "Bacon paid great attention to astronomy, discussed carefully the methods in which it ought to be studied, and constructed for the satisfaction of his own mind an elaborate theory of the heavens," his theory was purely Ptolemaic and altogether erroneous.

If the theory of Copernicus, while based on an exceptional amount of inductive evidence, was nevertheless a triumph of the deductive method, the work of Kepler was exceptionally, and indeed unduly, deductive. He was not willing to examine facts with sufficient patience before conceiving theories, but with amazing liveliness of imagination conceived theory after theory and then sought for facts whereby to test them. If he had not been controlled by singular self-restraint, leading him to submit his favoured fancies to the test of observation, and to give them up one after the other as observation decided against them, Kepler would have achieved no success. But fortunately his self-restraint in this respect was as remarkable as his freedom from all restraint in theorising. Nothing seemed more incautious than his theorising; but then nothing could have been more cautious than his investigation of his theories, or more thorough than the tests to which he subjected them.

Galileo was a disciple of the sounder scientific school. His labours, quite as necessary precursors of Newton's work on the physical side as Kepler's on the astronomical, were conducted on the truest principles. All his theories were suggested by observation (not one of Kepler's was), and they were all in turn tested by observation. The operation of terrestrial gravity in particular (despite the nonsensical story of Newton and the apple) was thoroughly mastered by Galileo, applying throughout the method of scientific research by which all the scientific discoveries of modern times have been effected. Assuredly Galileo borrowed nothing from his contemporary, the English Lord Chancellor.

When the way had been duly prepared, Newton entered on his great task. Let us consider what he did, and how he did it. A philosopher of the true Baconian type, Flamsteed, the Astronomer-Royal, was collecting at Greenwich multitudinous observations of the heavenly bodies—a work which might have gone on, even as the modern meteorological observations at Greenwich and elsewhere have gone on, till millions of observed facts had been collected and nothing learned. Newton, who knew that the planets move according to certain laws around the sun, and the moon—not recognisably under the same laws—round the earth, and further, that bodies are drawn towards the earth by the force of terrestrial gravity, was led—not by Flamsteed's collection of facts, not by gathered facts at all, but by a happy thought based on pre-established theories—to inquire

whether terrestrial gravity might not be an example of a property possessed by matter itself; whether the earth's attractive power might not extend to the moon, and be shared by the sun in such greater degree as corresponded with the sun's greater mass.

While the suggestion of these thoughts was independent altogether of any such gathering of evidence as the Baconian method required, the testing of the theory thus suggested was a work of pure deduction. Observations were employed, indeed; but they were such observations as the theory itself suggested. And the way in which the selection of observations for this special purpose was determined was not only deductive, but depended on such deductions as only a man of Newton's power could have formed.

Newton ascertained, first by means of mathematical methods of his own devising, that if a force or attraction residing in the sun determines the movements of the planets according to the laws ascertained by Kepler, that force must vary according to the law of the inverse squares—that is to say, the force diminishes as the square of the distance increases. He calculated what the earth's known attractive power, diminishing according to this law, would be at the moon's distance; and he found (after a long delay, due to the inexact observations and measurements of others) that under an attractive force, so diminishing with distance, the moon would travel around the earth as she actually does.

But Newton went much further than this. He made experiments and observations to see if this attractive force resides in all matter, and is always proportional to the mass or quantity of matter. He then discussed the details of the moon's movements—peculiarities which had long perplexed astronomers, had long afforded them the means, if Bacon was right, of educing the true theory of her movements, and had all the time taught *nothing*.

It was not the consideration of these peculiarities, not the induction of these observed facts, which led Newton to the true theory. On the contrary, the true theory was deduced from considerations applied to laws already discovered deductively by others; and the true theory led Newton to consider observed facts and peculiarities.

Newton went further, however, even than this. By pure deduction from his theory he showed that the moon's movements around the earth ought to be affected by certain minor peculiarities caused by the sun's perturbing action, and he invited Flamsteed to ascertain if such peculiarities really exist.

Flamsteed, thus guided, was able to supply the required evidence. As Professor De Morgan well remarked of the achievement, "Had it not been for Newton, the whole dynasty of Greenwich astronomers, from Flamsteed to Airy, might have worked away at nightly observation and daily reduction without any remarkable result, looking forward, as to a millennium, to the time when any man of moderate intelligence was to see the whole explanation"—a time which would never have come, whatever a believer in the Baconian method may imagine.

There is no evidence that Newton ever paid attention to aught contained either in Bacon's "Advancement of Learning," or in the "Novum Organum." But Newton's work suffices to make it absolutely certain that if he ever did weigh Bacon's method he found it wanting, for he followed a course of the very kind which Bacon had condemned, and carefully avoided the course Bacon had recommended. Moreover, as I wrote in 1865, Newton's success afforded a marked and early illustration of Bacon's error in supposing his system of philosophy would raise all its followers to one level, however various might be their talents and capacities. For of Newton it may justly be said that in genius, as in the work he accomplished, *genus humanum superavit.*

THE STORY OF CREATION.

A PLAIN ACCOUNT OF EVOLUTION.

BY EDWARD CLODD.

PART II.

CHAPTER VI.—(*Concluded.*)

"THAT many and serious objections may be advanced against the theory of descent with modification through variation and natural selection, I do not deny. I have endeavoured to give them their full force."* The sixth, seventh, and tenth chapters of the "Origin of Species" are proof of this. Darwin shirked no difficulty, and in laying stress upon whatever told against his theory he made its foundations more sure. One great, but unduly overrated, stumbling-block—the absence of intermediate forms in the fossil-yielding rocks—has been removed by the discovery of many more connecting links in the long chain of life than could be expected when we take into account the small minority of fossils which have escaped the havoc of the past, and when we remember how much smaller are the chances in favour of the preservation of the more fragile, rare, and unstable transitional forms than of the species which they connect.

Another leading objection, drawn from the barrenness of hybrids,† as, *e.g.* of the mule, loses much of its force in view of the numerous examples to the contrary, both in plants and animals, as amongst genera of the thistle and of the laburnum, and as in the cases of fruitful hybrids of sheep and goats in Chili, and of hares and rabbits in France.‡ But, as against natural selection, the real difficulty lies in the inter-breeding of species developed by selective breeding from a common stock. For example, the different species of pigeons have been developed from the wild rock-pigeon, and these are fertile with one another, which would seem to tell in favour of the fixity of species, unless the carrier, pouter, and tumbler are, after all, to be regarded only as varieties or subdivisions of species.§ The matter, however, is too abstruse for these papers, and, moreover, it has no weight as against the theory of derivation. We know very little as to the complex conditions ruling fertility and barrenness; we know that the reproductive organs are peculiarly sensitive to altered habits and surroundings, and we know further, that it is through changes in those organs that the barriers to interbreeding have arisen, and the consequent multiplication of countless intermediate varieties been arrested. Happily, the Darwinian theory has no fatal element of rigidness in it, and those who would mould it into a dogma know not what spirit they are of. It admits of alterations in detail at the behest of fresh facts, and of such correction of proportion as time alone gives to things new and near. But the truth of the theory of which it is a subordinate part will thereby stand out the clearer, and the full accord of past and present to the oneness of things appear more manifest.

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* "Origin of Species," p. 404.

† "Animals and Plants under Domestication," vol. ii. pp. 130–156, and chap. xix., *passim*.

‡ Haeckel's "History of Creation," vol. i., pp. 145–148.

§ No one definition of "species" has satisfied all naturalists, and the term "variety" is almost equally difficult to define, but, practically, when a naturalist can unite by means of intermediate links any two forms, he treats the one as a "variety" of the other, ranking the most common, but sometimes the one first described, as the "species," and the other as the "variety." Cf. "Origin of Species," p. 33.

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CHAPTER VII.—SOCIAL EVOLUTION.

Evolution of Mind.—If the theory of Evolution be not a universal, the germs of decay are in it. And here we pass from what is interesting to what is of serious import for us, because if the phenomena of mind are not capable of the like mechanical explanation as the phenomena of stars and planets and of vegetable and animal life, Evolution remains only a speculation to fascinate the curious. It can, in that case, furnish no rule of life or motive to conduct, and man, "the roof and crown of things," would be the sole witness against their unity and totality. If there be in him any faculty which is no part of the contents of the universe, if there be anything done by him which lies outside the range of causation, then the doctrine of the Conservation of Energy falls to pieces, for man has the power to add to that which the physicist demonstrates can neither be increased nor lessened.

The ground covered in former papers need not be retrodden to show that man is one in ultimate beginnings, and in the stuff of which he is made, with the meanest flower that blows, and that in mode of development from the egg to the adult state there is exact likeness between him and other mammals. But some repetition of the process of mental development from the lowest life-forms to the highest is needful.

"Structure for structure," remarks Professor Huxley, "down to the minutest microscopical details, the eye, the ear, the olfactory organs, the nerves, the spinal cord, the brain of an ape, or of a dog, correspond with the same organs in the human subject. Cut a nerve, and the evidence of paralysis, or of insensibility, is the same in the two cases; apply pressure to the brain, or administer a narcotic, and the signs of intelligence disappear in the one as in the other. Whatever reason we have for believing that the changes which take place in the normal cerebral substance of man give rise to states of consciousness, the same reason exists for the belief that the modes of motion of the cerebral substance of an ape, or of a dog, produce like effects."*

But let us begin at the bottom of the life-scale. The lowest things, being organless, or alike all over, respond to touch, "the mother-tongue of all the senses," in every part, simply changing their shape from moment to moment. A step higher we find forms in which unlikenesses in parts begin to show themselves—*e.g.*, in the formation of a layer at the surface—and here the responses to the stimuli, as they are called, become localised, because the movements of the stimuli take place, like all modes of motion, along the lines of least resistance. These movements give rise to changes in the structure of the organism, driving the molecules out of their places, and, following in incredibly rapid succession, finally lay down permanent nerve-tracks, built up of the more sensitive parts of the skin. All sense-organs, whether the whiskers of a cat or the eye of a man, all the wondrous network of nerves and the brain itself, have thus originated. Practice makes perfect; and, as the result of their incessant repetition, the lowest and simplest nerve-actions, known as *reflex*, take place automatically in plants and animals. Such are the contractions of an amœba or of the leaves of a mimosa; breathing, the action of the heart, winking of the eyes—in short, all actions that are performed unconsciously, and which are repeated in virtue of the tendency to do them being innate in the structure which each organism inherits from its ancestors. Besides these natural reflex actions, there is a group of artificial reflex actions which our higher intelligence enables us to acquire, as the arts of reading, playing instruments, &c.

As everyone knows, it takes a soldier a long time to learn his drill—for instance, to put himself into the attitude of "attention" at the instant the word of command is heard; but, after a time, the sound of the word gives rise to the act, whether the soldier be thinking of it or not. There is a story, which is credible enough, though it may not be true, of a practical joker, who, seeing a discharged veteran carrying home his dinner, suddenly called out "Attention!" whereupon the man instantly brought his hands down, and lost his mutton and potatoes in the gutter. The drill had been thorough, and its effects had become embodied in the man's nervous structure. The possibility of all education is based upon the existence of this power, which the nervous system possesses, of organising conscious actions into more or less unconscious, or reflex, operations.*

Instinct is a higher form of reflex action. The bird makes its nest or migrates from one zone to another by an unvarying route; the bee builds its six-sided cell; the chick breaks its way through the shell, balances itself, and picks up grains of corn; the new-born babe sucks its mother's breast, all in virtue of like acts on the part of their ancestors, and which, arising in the needs of the creature and gradually becoming instinctive, have not varied during long ages, the tendency to repeat them being transmitted within the germ from which bee and bird and man have severally sprung. But, as Gilbert White remarked more than a century ago, "the maxim that defines instinct to be that secret influence by which every species is compelled naturally to pursue at all times the same way or track without any teaching or example, must be taken in a qualified sense, for there are instances in which instinct does vary and conform to the circumstances of place and convenience."† Herein that delightful writer, without suspecting what he was conceding to the brute, indicates where instinct passes into *Reason*. For the main difference between the two is that, while the one is done because the animal cannot help doing it, the other is the conscious adjustment of means to ends, of selection as the result of reflection. In the one there is no pause, in the other there is a measurable interval, hence the stimuli to action are more complex and less rapid, giving time for that perception of likenesses and unlikenesses in things which is essential to conscious action. Further than this we need not now follow those processes of chemical changes in the molecules of the brain which, in ways we know not, result in consciousness. It suffices to say that whereas the lower animals, for the most part, start fully equipped for their functions, and rarely pass beyond them, a few higher approach man, *longo intervallo*, in having to pass through a period of helplessness, because the brain and connecting mental apparatus are not complete at birth.

In this lies the explanation of that capacity for teachableness, for profit from experience, which, although no special endowment of man, is his in immeasurable degree compared with the animals nearest to him in development. And since the knowledge that is gained and the habits that are acquired in early life abide with us, and determine character, therein lies the importance to ourselves and to others of learning what is true and of cultivating what is good.

Enough has been said to show that, vast as are the differences between the highest and lowest mental actions, there is no break in the series which, starting with the reflex movements of an amœba or of a carnivorous plant, advances along the line of animal instinct and intelligence, and ends with the complex movements of the brain of civilised man, with its infinite modes of response to infinite stimuli.

Evolution of Society.—Like every other species, man tends to vary, and also to multiply at a rate beyond the means of subsistence. Myriads of human beings perish every year in a few hours or days after birth; vast numbers die in early childhood; wars, pestilences, famines, and catastrophes decimate at intervals the populations of empires. Natural selection weeds out the least fit, and

* Hume, p. 105.

* Huxley's "Elementary Physiology," p. 306.

† "Natural History of Selborne," Letter lvi. to Mr. Barrington.

although under civilised conditions the weak and diseased are coddled, and even multiply their kind, this check is too local to affect the larger result, while that which the race might gain in physique by its removal is not to be compared to the loss that would ensue from the repression of mercy and sympathy. In a barbaric society weaklings like Newton and hunchbacks like Pope would have been left to perish; civilisation spares them, and humanity is enriched by their genius.

As the chief difference between man and his nearest congeners, the highest apes, is in the size and creases of the brain, brain-capacity being the measure of advance in the life-scale, it follows that he has reached the topmost place through the action of natural selection in the modification of his brain more than of his body, for his erect position and modification of the fore feet into hands were due to his superior intelligence, mind ruling function, and function ruling structure. Whichever among the arboreal creatures from whom he is descended possessed any favourable variation, however slight, in structure of brain and sense-organs, would secure an advantage over less favoured rivals in the struggle for food and place and mates. The qualities which gave them success would be transmitted to their offspring, the distance over their competitors gained in one generation would be increased in the next, brain-power conquering brute force, skill outwitting strength, till the chasm between man and the highest ape, and ultimately between man savage and man civilised, became impassable.

For in following the evolution of mind to its highest operations and results, the comparison lies between the several races of mankind. Darwin says that he does not believe it possible to describe the difference between savage and civilised man. "It is the difference between a wild and tame animal, and part of the interest in beholding a savage is the same which would lead every one to desire to see the lion in his desert, the tiger tearing his prey in the jungle, the rhinoceros wandering over the wide plains of Africa." He describes the Fuegians, who rank amongst the lowest savages, as men "whose very signs and expressions are less intelligible to us than those of the domesticated animals—men who do not possess the instinct of those animals, nor yet appear to boast of human reason, or at least of arts consequent on that reason."* Such races are much nearer to the ape than to the Caucasian.

The fundamental likeness between the varieties of man evidence that the physical and mental differences which mark him from the highest apes had been acquired before his migration from the place of his origin and development, wherever that may have been. That migration, however, occurred long enough ago for the play of causes effecting the enormous differences just named. But we can only infer from the condition of existing savages what "primitive" man was like. Doubtless he was lower than the lowest of these—a biped, with powerful sense-organs (always keener, in virtue of constant exercise, in the savage than in the civilised, who supplements them by science), strong instincts, uncontrolled and fitful emotions, small faculty of wonder and nascent reasoning power; unable to forecast to-morrow or to comprehend yesterday, living from hand to mouth on the wild products of nature, and finding shelter in trees and caves, ignorant of the simplest arts, save to chip a stone missile and, perhaps, to produce fire, strong in his need of life and vague sense of right to it and to what he could get, but slowly impelled by common perils and passions to form ties, loose and haphazard at the outset, with his kind, the power of combination with them depending on sound-signs and gestures.

* "Naturalist's Voyage Round the World," p. 504.

Such, in broad outline, was probably the general condition of the earliest known wanderers, the relics of whose presence—rudely-fashioned stone tools and weapons—are found associated with the bones of huge extinct mammals, as the mammoth and the cave-lion, in old river-beds and limestone caverns. As the successive deposits and their contents show, not till long ages had passed, bringing new and settled conditions, with knowledge of agriculture, metals, and other useful arts, do we find any marked progress among mankind. Even that progress, great and not unchecked, as both ancient and modern civilisations witness, has been confined to a minority of the species and to a narrow zone, while, compared to the antiquity of man, it is but as yesterday. The enterprise of the higher races has explored and utilised large tracts, and the pressure of population at the centres of civilisation has within quite recent periods vastly extended their radii, but whole empires, advancing to a certain stage, have through isolation and the tyranny of custom, or dread of change, stagnated, whilst the lowest races have remained unmodified, like the lowest organisms, and have more or less succumbed before the imported vices and the weapons of the white man. But the causes of arrest and of advance are alike complex; man, like every other living thing, is the creature of outward and inward circumstances, and many influences have worked in the shaping of his destiny. Certainly, extremes of climate have been fatal to advance beyond a given stage; it is in the temperate zones that the incentives exist to continuous and indefinite progress.

Man by himself is unprogressive; therefore his advance is due to the cultivation of the social instincts. "There is a wonderful spirit of sociality in the brute creation, independent of sexual attachment," wrote Gilbert White in 1775, and Darwin remarks that "the social animals which stand at the bottom of the scale are guided almost exclusively, and those which stand higher in the scale are largely guided, by special instincts in the aid which they give to the members of the same community; but they are likewise in part impelled by mutual love and sympathy, assisted apparently by some amount of reason."* In the degree that animals are social, we find them higher in the scale, as ants, bees, and wasps among insects; and, among domestic animals, dogs, whose wild ancestors hunted in packs, as compared with cats, which inherit the more solitary and wandering habits of their wild ancestors.

Man inherits the social instincts of a remote ancestry. Farther back than the records of his presence take us, he found strength in unity, and the more so in virtue of his physical inferiority to many animals. His normal state was one of conflict, both with them and with his own species, for Carlyle's remark that "the ultimate question between every two human beings is, 'Can I kill thee, or canst thou kill me?'" is true of every stage of man's history. The struggle is all along the line; it may change its tactics and its weapons; among advanced nations the military method may be more or less superseded by the industrial, and men may be mercilessly starved instead of being mercifully slain, but, be it war of camps or markets, the ultimate appeal is to force, and the hardiest and craftiest win. But they that have hope of their kind believe that these shall not always prevail.

We do not know what the earliest social unions were like. Probably there were no family arrangements as we understand the term, but only various kinds of relations, more or less fugitive, between groups of men and women. The details, however, do not affect the general fact of social intercourse, in which community of interest was the binding

* "Descent of Man," p. 109.

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force. Impetus was given to more personal and permanent relationships by the longer period of infancy in man as compared with the same period in the man-like apes, in whom, again, it is much longer than in monkeys.* For as the maternal instinct "sublimes the passions, quickens the invention, and sharpens the sagacity of the brute creation,"† so this period of helplessness would draw parent and child closer together, evolving love and sympathy, and developing those enduring and exalting relations of the family which widened into tribal life. Struggles against common foes brought the bravest to the front as leaders, turbulent elements within involved the rule of the ablest, disputes called for the settlement of the wisest, and thus the foundations of law and order were laid.

Evolution of Language, the useful Arts, and Science.—Two things markedly separate man from brute—his erect attitude, whereby the hand, no longer an organ of support, is left free to carry out the behests of the mind; and language. Not that the "dumb" animals, as they are called, are all voiceless: many of them have no small or inexact gamut of sounds by which to express their emotions, their love-calls, and their danger-cries. But although these may be not more unintelligible to us than the language of savages like the Fuegians, which Captain Cook compared to a man clearing his throat, the fact abides that language, as the symbol of ideas, as the means of conveying thought from mind to mind, marks the impassable gulf between the mental capacity of man and all lower animals. Its origin lies in his need to communicate with his fellows, and but for it all attempts after social union would have been as the weaving of a rope of sand.

Words themselves reveal under analysis the history of their origin from a few formless root-sounds, which were instinctive cries or imitations of various natural sounds, very largely aided at the outset by signs and gestures. To this day, gesture-language is the sole mode of communication between certain wandering tribes of American Indians, and there are other tribes whose stock of sound-signs is so limited that they cannot understand each other in the dark. We can never know what the first sound-signs were like, but their choice and currency obviously depended on the success with which they conveyed the meaning of those who invented them, which, of course, applies to every stage of language, from the simple names of objects with which it began to the ultimate transfer of those names to ideas. For all abstract terms have a concrete base. Certain it is that from mimetic sounds, with their boundless variety of modulation, there have been developed not merely the scanty and shifting speech of the lower races, but the wondrously rich, copious and ever-growing languages of civilised races, the sound-carriers not only of man's common wants, but of the lofty conceptions which are enshrined in prose and poetry, and without which, now made the common intellectual wealth of nations through the arts of writing and printing, how poor and dwarfed would human life have been! Language has, therefore, followed the common law of Evolution in advance from the simple to the complex, proving itself to be one of the many instruments which the skill of man has perfected from raw materials as his social needs have multiplied and as his intelligence has increased.

And the like adaptation of means to ends applies to the development of the useful arts, as well as of those arts in which the head is more concerned than the hand. The primal needs of clothing and shelter, of weapons of war and of the chase—for the sword and bow precede the spade and hammer—the need, under more settled conditions, of implements for the household and the field, set man's wits at work to supplement and improve that which nature supplies in the rough. Every instrument of his culture bears traces of its development from simple forms: the spear and knife-blade from the sharp-edged flint flake; the saw from the jagged-edged flake; the matchlock from the crossbow; the warrior's armour from the scaly hide of beasts; the plough from the stag's antlers or the tree-branch; the mill from pounding-stones; the ship from the scooped-out trunk; the oar from the hands or feet as primitive paddles; the house from the sun-baked clay hut, or, as in China, from the Tatar tent; the pyramid from the earth-mound or cairn; the alphabet from picture-writing; sculpture and painting from rude scratchings on bone and horn; stringed instruments from the twang of the hunter's bow; wind instruments from the blast of his horn; poetry and song from the rude but impassioned savage chant of love and war; arithmetic from primitive perception of more or less; counting and measuring, as shown in our words cubit, ell, foot, hand, digit, span, and in cognate terms from other languages, from using the fingers, toes, and other parts of the body; geometry, or *land*-measuring, from early perceptions of space; all science from crude and false guesses about the nature and causes of things, from illusions of alchemist and astrologer, which made attainment of the truth more possible to chemist and astronomer; and so on through the whole range of man's social and intellectual development.

* Cf. Fiske's "Outlines of Cosmic Philosophy," ii. 342–346.
† White's "Selborne." Letter xiv. to Mr. Barrington.

COAL.

By W. Mattieu Williams.

UNDERGROUND ventilation presents problems of great practical difficulty. A thorough searching and abundant flow of air through every main road, cross road, and by-way in a coalpit is a stern necessity, a matter of life and death. Not only the exhalations from the lungs and bodies of the men and horses, and the products of combustion of the lights have to be removed, but also the gases from the coal itself. These at times burst out in violent jets; some of them are inflammable, others suffocating, and all must be swept away.

If we should judge by the usual failure of our architects and builders to secure the steady and uniform ventilation of public and private buildings, the satisfactory ventilation of a coal mine would appear practically impossible. The air for the mine has to be all carried down artificially; in some cases to perpendicular depths of a quarter of a mile below the surface, and has to proceed in a complex, zigzag, winding journey, all round every side—north, south, east, west, and all intermediate points; down the middle and up again; through low-roofed passages extending to an aggregate length measurable in miles; and then it must climb up again, bearing with it all the pestiferous gases and vapours it has encountered in the course of its long journey.

As an illustration of this, I will repeat the figures I have already quoted when writing on "Domestic Ventilation" in an early number of Knowledge. They are from the Report of the Lords' Committee on Coal Mine Accidents in 1849. At the Hetton Colliery the quantity of air carried down amounted to 168,560 cubic feet per minute. Its rate of motion was 12 miles per hour. The main current was cut into 16 splits or subdivisions of about 11,000 cubic feet per minute each, and having on an average a course of

4½ miles each. The greatest length of a single course was 9 1/10 miles. The total distance travelled was 70 miles. All these quantities are now greatly increased in the larger mines of the present day. As much as 300,000 cubic feet per minute is in some cases supplied.

Much ingenuity has been expended on the invention of huge air-pumps and fans for the ventilation of coal mines. Many have been patented, and a few actually used, rather in small continental mines than in the larger collieries of this country. The steam-jet has also been applied. But the most successful agent, the giant whose services can be obtained at the smallest wage, is gravitation. The bunglers of domestic ventilation seem to forget, or not to have learned, that air is heavy, and becomes of itself a directly available ventilating engine by its accommodating variation of weight in proportion to bulk. The simple principle upon which colliery ventilation is conducted, and other ventilation should be conducted, may be illustrated by the following experiment.

Place a few layers of paper on a table, and on this a lamp-chimney—the use of the paper is to afford a cushion on which the bottom of the chimney shall rest without air space between it and the table. Then take a candle-end about an inch long, light it, and place it on the paper with the chimney over it. In spite of the open top of the chimney, the candle will be suffocated for lack of air—will flicker and struggle, and finally become extinguished by its own exhalations if the chimney is above six or eight inches high and the candle is placed fairly in the middle of the chimney. Repeat this more than once to prove that the extinction is not accidental.

Now cut a piece of metal (card will do if slightly moistened and carefully used) of T shape, with the stem of the T nearly as wide and long as the lamp-chimney, and the cross top just sufficient to serve as a rest, so that the broad stem may hang down and divide the tube into two equal partitions, extending from the candle-wick upwards. Now relight the candle and place the glass chimney thus divided into two partitions over the candle as before. The flame will presently take itself to one side or other of the dividing partition, and, having once done so, will remain on that side and burn freely, though occupying an apartment with only half the air space of that in which it was previously smothered.

If the experimenter is one of those wicked people who smoke tobacco, a puff from his pipe or cigar directed to the top of the divided chimney will demonstrate at once the reason of the change. The smoke will be forcibly dragged down that side on which the flame of the candle is not, will turn rapidly round the lower edge of the partition, and then rapidly ascend on the side in which the flame of the candle is.

The *rationale* of this is simple enough. When the chimney is divided by the partition and without the candle flame, there are two columns of air communicating below, one on each side of the partition. So long as these are of equal temperature, and consequently of equal weight, they balance each other and remain at rest; but when the candle is lighted and its flame takes to one side or the other, that side is heated and expanded. There is less air in a given space on that than on the other side, and consequently the heavier column presses up the lighter, which thus ascends by virtue of the impulse given to it by the preponderating gravitation of the cooler air in the other partition.

When the chimney is undivided the candle-flame raises all the air within it to a higher temperature than the outer air, and therefore this denser outer air proceeds to sink below the lighter air; but in doing so it encounters the uprising heated air. A struggle ensues between the directly opposed currents in the confined space. The flame of the candle indicates this very instructively. It has sunk down nearly to extinction, when presently it starts up vigorously, being blown aside at the same moment. This is when its feeble heating power permitted a downcast of fresh air on one side or other, but the greater this downcast, the greater the uprising and consequent resistance to fresh downcast, and thus, after a series of near approaches to death and sudden revivals, the flame at last expires.

The lamp chimney in this experiment represents the shaft of a coalpit divided as coalpit shafts formerly were divided in this country by a brattice, and as they are still divided in other countries where human life is held less sacred than capital. I have already referred to the accident which was mainly instrumental in bringing about this legislation, but an interesting letter I have received from a reader of KNOWLEDGE (who writes from Hetton-le-Hole, and evidently understands what he is writing about) tells me that I made a mistake in attributing the wreck of the brattice to a swing of the cage. As the catastrophe is historical and instructive, and my mistake was derived from a published account that must mislead others, I will quote the letter. Mr. Moon (or Moor) says: "The real cause of the melancholy accident (which took place on January 16, 1862, causing the loss of 202 lives) was the fracture of the cast-iron beam of the pumping-engine, and the consequent precipitation of its outer end (weighing about twenty-two tons) down the pit shaft. It carried away the wooden brattice, pumps, and the pit work generally, and blocked up the shaft to a depth of about 138 yards from the surface, where the downward course of the *débris* was arrested by the oak buntons on which the middle set of pumps rested. Every effort was of course made to rescue the imprisoned men, but it was found impossible, so great was the wreck, to clear the shaft in time, and the result was that the whole of them succumbed to suffocation by the carbonic acid gas."

The death of these poor fellows by suffocation in spite of the large space of main roads, cross roads, and workings, demonstrates the absolute necessity of continuous and sweeping ventilation. This disaster further proves the terrible risk to which the whole population of a colliery is exposed wherever there is but one shaft—one outlet. Any accident whatever, and there are many that may occur, which closes this one outlet or damages its hauling and ventilating machinery, leaves them imprisoned in a dreadful tomb, in a position to which no demands of trade or commerce or other men's luxury should wilfully render them liable. Therefore our legislature justly ordered that thenceforth no colliery shall be worked with less than two shafts, so that if one should be disabled, the other remains available for escape.

A second shaft being now compulsory, neither is bratticed, and one is used for the descending, the other for ascending current, or, in technical language, one is a downcast, the other an upcast shaft.

In some cases it is possible to obtain a natural downcast and a natural upcast without any artificial aid. This best occurs when the dip or slope of the coal-seam is in the contrary direction to that of the surface slope. It is possible whenever they differ, but the greater the difference the better. Let us suppose that the coal-seam is level and the surface sloping, the required difference is obtainable by sinking two shafts down to the coal—one where the coal is nearest to the surface, and the other where it is much deeper. Thus we should have two shafts of unequal depths, and consequently bearing columns of air of unequal heights.

In workings of moderate depth the underground tem-

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perature remains all the year round at the mean temperature of the air above; at greater depths it increases about 1° to 60 or 70 feet. In the first case the air of the pit will be cooler in the summer and warmer in the winter than the air above. Let us suppose, for example, that the depth of one shaft from the surface is 600 feet and that of the other 100 feet. Both shafts convey to the workings below the general pressure of the great atmospheric ocean. But the column in the deeper shaft is made up of 600 feet of underground air supplemented by the outer air, while the shallower pit has but 100 feet of underground air, and makes up the equivalent 600 by 500 more of outer air.

Therefore, if the outer air is denser than the underground air (as in winter time), the pressure in the 100-feet shaft will preponderate, and *vice versâ* in the summer, when at a given level the column of air pressing through the deeper shaft includes 500 feet of denser underground air in the place of 500 feet of warmer outer air that is pressing through the 100-feet shaft. For reasons presently to be explained, such automatic ventilation is but little used in coalpits.

THE ONE-SCALE ATLAS.

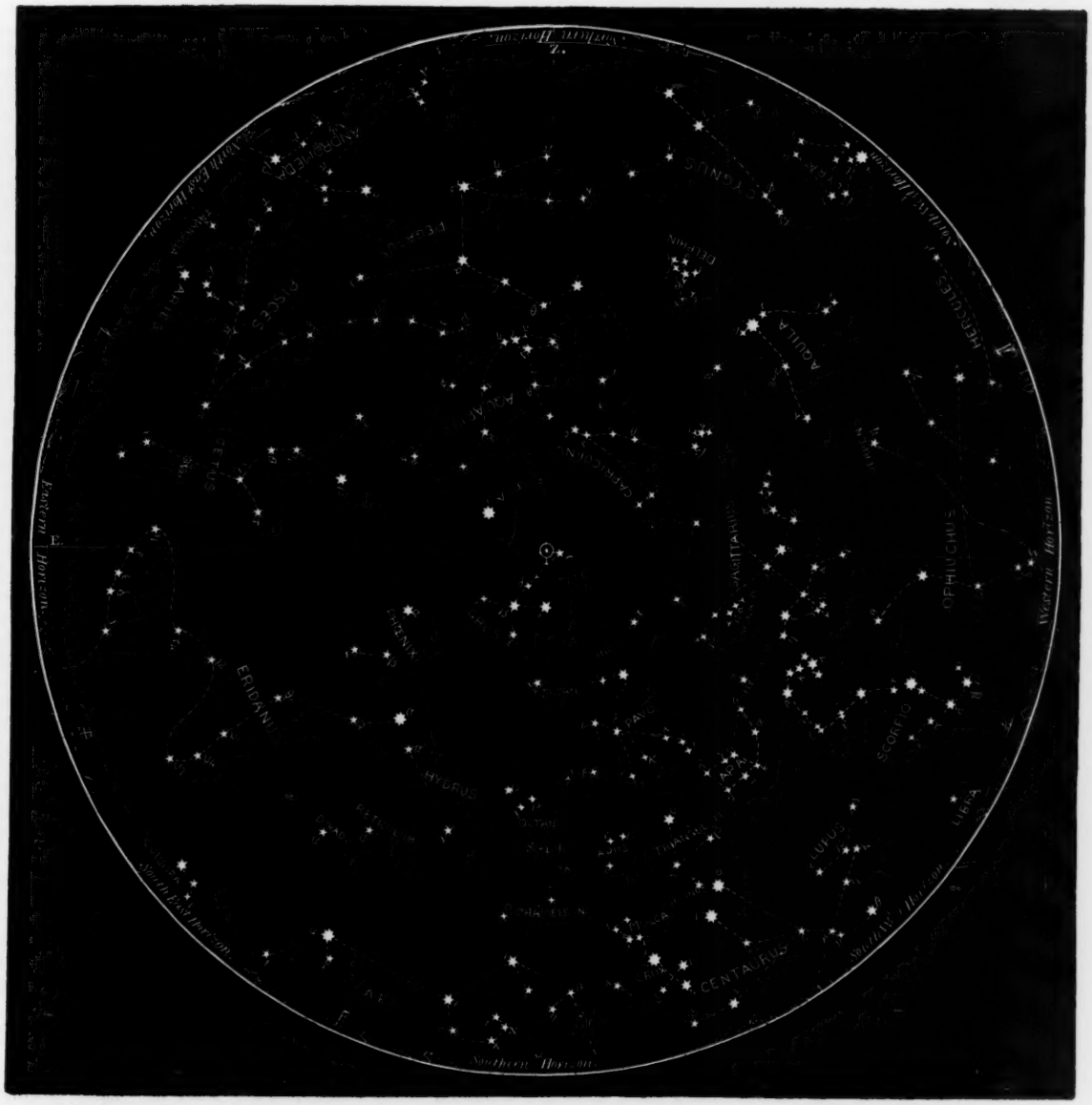
MAP VI.

by Rich.d A. Proctor.

MAP I
MAP 8
MAP 4
MAP 7
MAP 5
The linear scale radially is uniform throughout; the thwart scale is greater by 1/35th half way to the edge, and by 1/16th at the edge.
NORTH PACIFIC OCEAN
BEHRING SEA
OKHOTSK SEA
ALASKA
Aleutian Is
Andreanoff Is
Kuril Islands
JAPAN
MARIANA OR LADRONE Is
CAROLINE ISLANDS
Gilbert Is
Phoenix Is
SANDWICH ISLS
TROPIC OF CAPRICORN
EQUATOR
Scale of Miles at centre of map and radially all over map.
English Miles
Small areas are greater by 1/35th half way to the edge, and by 1/16th at the edge.
Edw.d Weller, del

THE SOUTHERN SKIES.

MAP X.—For JULY, AUGUST, and SEPTEMBER.



The Night Skies in the Southern Hemisphere (Lat. 46° to 24° S.)
and the
Southern Skies in England (Upper Half of Map only) at the following Times:

At 1 o'clock, morning, Aug. 7.	At 11 o'clock, night, Sept. 6.	At 9 o'clock, night, Oct. 7.
„ 12.30 „ „ Aug. 14.	„ 10.30 „ „ Sept. 14.	„ 8.30 „ „ Oct. 15.
„ Midnight, Aug. 22.	„ 10 „ „ Sept. 21.	„ 8 „ „ Oct. 22.
„ 11.30 o'clock, night, Aug. 29.	„ 9.30 „ „ Sept. 29.	„ 7.30 „ „ Oct. 30.

Star Magnitudes.

First . . . . ✱ Second . . . . ✱ Third . . . . ★ Fourth . . . . + Fifth . . . . ▲

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IMPROVING SHAKESPEARE.

By Benvolio.

I WAS a very small boy when I made my first emendation on Shakespeare, and, though it was quite wrong, I think it was not much more faulty than some of those which the learned Bentley made on Milton's text, and which the most profound Shakespeareans have ventured on the text of Shakespeare. My emendation was made on the text of "Twelfth Night." A passage in that most charming comedy perplexed my young mind, viz., where Ophelia says, "Rudesby, begone!" I wondered who Rudesby was. Might it not be Fabian's other name? But the list of *dramatis personæ* said simply Fabian. Then the idea presented itself that Shakespeare had probably written "Rude spy, begone!" This made everything clear. Olivia is still addressing Sir Toby. She has already told him to be off, as "fit only for the mountains and the barbarous caves, where manners ne'er were preached;" but manifestly he has lingered, so she turns from Cesario (*i.e.* Sebastian), and, seeing Sir Toby still contemplating them, calls her kinsman very naturally a rude spy.

It were to be wished that all Shakespearean emendations were as natural and as little forced. The change of one letter is slight compared with some of the changes they have asked for. Even when "a table of green fields" was altered into "a' babbled of green fields," beautiful though this emendation undoubtedly was, a certain daring was shown.

My emendation was quite wrong, however, though I held to it for many years. The real interpretation of the line is curious. The word "rudesby" is still in use in the part of England where Shakespeare was born. I cannot say I have heard it myself, but, talking a few years ago with Mr. Christie Murray, who is a Warwickshire man, I learnt from him that the expression is quite commonly used in Shakespeare's county for a lout, a coarse, rude fellow. How widely the use of the expression extended in Shakespeare's time, I do not know; but quite probably the word was as distinctly provincial in his day as now, though he may not have suspected it.

I have learnt since those early Shakespearean days of mine to look with much doubt on attempts to remove difficulties in Shakespeare's plays by verbal, or even by literal changes—at least until a very resolute effort has been made to find an interpretation for the words as they stand. The edition of Shakespeare I read when nine years old certainly encouraged attempts at verbal and literal emendation. The plays came out in penny numbers—not so cheap as the wonderful ninepenny (nominally shilling) Shakespeares now obtainable in England, but in those days a daring experiment. The penny plays did not exactly form an *édition de luxe*. How well I remember the varied tints of the paper covers! I had a notion that in some way they indicated the nature of the play, till a re-issue abruptly shook my faith by offering "Othello" in the lilac-tinted cover which I had thought appropriate (goodness knows why!) for the "Taming of a Shrew"; while "A Comedy of Errors" appeared in the dark blue cover in which the anguish of the "Moor of Venice" had been before enwrapped. The text was not by any means pure. I remember that I learnt the part of Aufidius for parlour recitation, my elder brother being Coriolanus (awful nuisances we must both have been, I imagine), and I brought the house down (very likely they were only waiting a decent excuse for laughing) by denouncing the fraternal Coriolanus as "insolvent villain!"—so my text, however, had it. Only five lines before, the Second Lord, represented for the occasion by a sister, had perplexed the auditors by remarking, equally with the authority of our penny Shakespeare, that Coriolanus "is noble, and his fame folds in this orb: O the earth"—a statement which I imagine no one on "this orb o' the earth" could interpret as our Second Lord announced it.

The emendation mentioned above, by which Mrs. Quickly is made to say that Falstaff's "nose was as sharp as a pen, and a' babbled of green fields," has justly been regarded as very happy, yet (perhaps because I am prejudiced against such emendations) I doubt if Shakespeare ever wrote that. Somehow that heavy spondaic ending "green fields" sounds unlike Shakespeare, at least in such a poetic passage. Then, is not the touch too fine for such a woman as Mrs. Quickly? Shakespeare might have put such a saying in the mouth of a Kent talking of Lear's last thoughts. He might even have pictured a worthier person than Mrs. Quickly recalling such thoughts of the dying Falstaff, unlike though they were to anything he had spoken about while before us in the fulness of his jolly wickedness; for many a man of similar life has wandered back in that way in his dying moments to his boyhood's purer thoughts. But if Falstaff had had such thoughts old Quickly would not have talked of them. She recalled his remark that "women were devils incarnate" with the appropriate explanation (for her) that "a' could never abide carnation; 'twas a colour he never liked," and, moreover, that "he was rheumatic" (a line in "Venus and Adonis" shows we must accent the first syllable), and so knew not what he was saying. But nowhere does Mrs. Quickly say anything to match with the tender thought, "he babbled of green fields." She would have put such thoughts from him, and afterwards from her own mind, just as when he called on God she told him, "To comfort him, a' should not think of God; there was no need to trouble himself with any such thoughts yet." [Here, by the way, seems further reason for thinking that he had not begun to babble.] In the folio, which contains the first complete edition of the play ("Henry V."), we have the apparently unintelligible words, "His nose was as sharp as a pen, and a table of greene fields." It has been suggested that the true reading is "on a table of greene frieze," but the frieze is objectionable. Why not simply "on a table of greene fields"? The word "field" for a blank coloured space, was in much more common use formerly than now. The reader will remember the Black Knight's shield in "Ivanhoe," bearing a shackle-bolt on an azure field; and it is known that heraldic terms were once in very common use. The emendator who suggested "on" for "and" said, very justly, that it would be quite in Mrs. Quickly's way, having been reminded of a pen as sharp-looking, to recall the occasion when the pen had been seen by her which suggested the comparison, the greenish table, perhaps, being called to her recollection by Falstaff's pallor. Her remark would then simply mean, his nose looked as sharp as a pen such as I once saw lying on a table of green field-tints—that is, of green background.

That this would be in Mrs. Quickly's manner, and, therefore, more Shakespearean than the other reading, though not so poetical, cannot be doubted. Consider the way in which, whenever she tells of anything, she runs off into all sorts of side-recollections; as, for example, "Marry, thou didst swear to me upon a parcel-gilt goblet—sitting in my dolphin chamber—at the round table—by a sea-coal fire—upon Wednesday in Whitsun week—when the Prince broke thy head for liking his father to a singing man of Windsor." And, again, "Did not Goodwife Keech, the butcher's wife, come in then and call me gossip Quickly? coming in to borrow a mess of vinegar—telling us she had a good dish of prawns—whereby thou didst desire to eat some—whereby I told thee they were ill for a green wound."

So wandering is Dame Quickly's mind, indeed, and so clearly has Shakespeare already shown this, that I am not sure we need even change a word. From her such a saying as "his nose was as sharp as a pen, and a table of green fields," would be intelligible, though not from any person of coherent ideas; if this is not admitted, and we change "and" to "on," it may be said the change is as great as from "table" to "babbled"; but the former mistake is one which a compositor would be much more likely to make than the other. No one would ever think of altering "a' babbled of green fields" into "a table of green fields" if he had read the words aright; whereas it would be a commonplace and familiar sort of mistake to set up "and" for "on." As regards reading the passage right, it should be remembered that Shakespeare would have written the word "table" with a capital "T," but "babbled" with a small "b." (The double "b" does not count, I must admit, for "babble" was written "bable" in Shakespeare's time.

On the whole, however, the strongest objection against the poetical "babbling of green fields" is that it is far too poetical for Mrs. Quickly, it was wholly beyond her nature to have described Falstaff's wanderings so touchingly.*

And here I may notice what I take to be a wholly faulty objection taken by many, and in particular by Charles Reade (in "Hard Cash"), to the familiar simile in the best known of Hamlet's soliloquies, where the Prince speaks of taking up "arms against a sea of troubles." What arms? asks Reade; "I suppose buoys and a cork jacket," or words to that effect. It does not seem to be noticed when such objections are made that it is Hamlet, not Shakespeare, who is soliloquising. Hamlet may not be mad, though I myself cannot see how the theory of his being wholly sane can be maintained by any one who notes that it was immediately after he had seen the Ghost, and long before he could have formed any deliberate plan of simulating madness, that his wild and whirling words are first heard; but he is assuredly much perturbed in spirit. Apart from this, though we call the passage a soliloquy, and though it is always delivered as such, Ophelia is present all the time. If Hamlet's madness is wholly assumed, yet the assumption would not be thrown off here; and as a matter of fact Ophelia throughout the scene deems Hamlet mad, saying the moment he leaves, "O what a noble mind is here o'erthrown!" Now, for Shakespeare, composing a sonnet, to speak of "taking arms against a sea of troubles" would doubtless be false poetry; but for the much-perturbed Hamlet, in the presence of one whom he would have regard him mad, to speak in that way would be altogether a true dramatic rendering of the position. The words would not even be utterly "wild and whirling"; they would only wander enough from exactness to correspond with Hamlet's state of mind, actual as well as in part assumed.

There is a passage in the same play which has exercised commentators, and led to the invention of multitudinous new readings, though it needs in reality no change whatever, and if a little confused or rather, I should say, complicated, can yet be quite readily and reasonably interpreted. Osric has just, in elaborate phrase, praised Laertes—so elaborately that Horatio presently asks whether they might not as well speak in "another tongue." But before saying this Hamlet mimics the idiotic phrases of Osric, in the remarkable answer beginning, "Sir, his definement suffers no perdition in you; though, I know, to divide him inventorially would dizzy the arithmetic of memory; and yet but yaw neither, in respect of his quick sail." (This exquisite fooling is not in the folio, the Hamlet in which was edited from a playhouse transcript.) Does not some dullard, whose arithmetic of reason must have been grievously dizzied, propose the substitution of "raw" for "yaw"?—turning complication into sheer nonsense. Repeatedly one sees this passage quoted as manifestly corrupt, and sometimes as hopelessly corrupt. Many alterations have been suggested, though I think nothing quite so idiotic as "raw" for "yaw" has ever been proposed. In reality no change is necessary. Osric has been mixing up his ideas and his metaphors in the most preposterous fashion; Hamlet, therefore, does the like. Definement, perdition, inventory, dizzying, arithmetic, and memory—surely after mixing these in the compass of three lines he may be expected to start yet another idea in the rest of the sentence. The "quick sail" shows that he has done so; and the sea term "yawing" belongs to this new idea. It may not be so familiar in our mouths to-day as it was in men's mouths in Shakespeare's time, when all men talked of the doings of the sea-dogs who made Elizabeth's days famous for all time. Many an English buccaneer had seen the big Spaniard that sailed in pursuit "yaw" as he punished her about the bows with ball and bullet—not wholly giving up the chase, but leaving her course as his blows fell on her cumbrous prow and forecastle. (For only a steady crew can steer a ship truly under such conditions.) Such a man, describing the chase afterward—very likely Shakespeare had heard many a yarn of the kind—would tell how the pursuing ship crowded all sail, and came on in swift pursuit, "yet but yaw as we pounded her bows, and so fell astern in respect of our quick sail." That is just what Hamlet, mixing his metaphors, means. "Sir," he says, "he suffers no loss as you define him; though I know to set out all his qualities as in an inventory would grievously tax the memory, and even then fall behind, so far ahead of all praise do his abilities take him."

The curious passage about knighthood in the "Merry Wives of Windsor" is another of those which seems to me to have been needlessly dealt with as difficult. Mrs. Ford has said she "could be knighted" (playing on the words); Mrs. Page pretends to understand her to mean that she might herself be made a knight, and answers, "What? thou liest" (mid-county English for "you lie under a mistake"). "Sir Alice Ford! these knights will hack; and so thou shouldst not alter the article of thy gentry." A commentator says the word "hack" refers to hacking off a knight's spurs in token of disknighting. This is nonsense; Shakespeare had no such meaning. Mrs. Page would hardly have suggested that a woman knight would be received by other knights with contumely, and rejected from their order. The word "hack" is used in its other sense, quite familiar in Shakespeare's time, the sense of growing common. She says, in fact, these knights will soon be so common that a simple gentleman will have better standing; so keep you to your gentry, not going in for knighthood. (Shakespeare uses the word "hackney" in "Love's Labour's Lost," and "hackneyed" in the first part of "King Henry IV.")

A passage which has given rise to much dispute is that

* It is absolutely certain that the passage should not be left and understood precisely as it stands in the folio. Remembering that Shakespeare repeatedly uses "table" or "tablet," or any small surface on which marks or colouring may be put, while in his time a patch of colour was called a field, may we not understand the words, "his nose was as sharp as a pen, and a table of greene fields" to mean simply, "his nose was as sharp as a pen, and a mere tablet of green spots"? In other words, having given her unpoetical account of the shape of Falstaff's nose, Mrs. Quickly adds an equally ridiculous description of its colour. Shakespeare represents Falstaff as dying of a sweat—that is, of the sweating sickness—and in that disease no such changes of colour took place. Bacon expressly says there were neither purple nor livid spots. But this was probably not known to Shakespeare, as the sweating sickness died out finally in 1551.

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in which Lenox, speaking of Macbeth's attempt to fix Duncan's murder on the princes, Duncan's sons, says:—

> Who cannot want the thought how monstrous
> It was for Malcolm and for Donalbain
> To kill their gracious father?

This, say the commentators, should clearly have been, "Who can want the thought?" and a score or so of suggested changes have been proffered. In reality it seems clear Shakespeare wrote the passage just as it stands. Nor does the simple meaning of the words seem unnatural or farfetched. "Who is there" so unapt to think justly that he cannot (that as it were, he is not *canny* enough to) wish to entertain the thought that it was most monstrous for the princes to kill their father, though we as courtiers *must* not think in that way. Of course, this way of speaking is a trifle strange, but then the whole of Lenox's speech is strangely toned. "'Twould have angered any heart alive to hear the men deny 't," he says of the grooms, whom Macbeth accused of the murder and killed—a quaint way of indicating his own opinion that Macbeth murdered them that they might have no chance of denying the charge, and so throwing the guilt on him.

THE "SATURDAY REVIEW" ON LUCK.

By Richard A. Proctor.

"We" have the receipt of fern-seed; "we" walk invisible;—
as in a castle "cocksure."—Shakespeare.

THE *Saturday Review* informs me that my little book, "Chance and Luck," does all that I hoped it would do, all that I wanted; nor do I feel intense sorrow when I learn from the same infallible source that my book fails to achieve a result which no man in his senses would ever hope to accomplish. I strove to show those who are not wholly foolish the folly of gambling and speculation by presenting, as a matter of simple evidence, the risks to which they expose themselves, and this, the *Saturday Review* condescends to tell me, I have done satisfactorily. "Mr. Proctor is valuable in his handling of 'martingales,' in his refutation of the incalculably mischievous doctrine of the 'maturity of the chances'; in one particular point Mr. Proctor comes out in a way that if not novel is certainly not common"; moreover, "some of his demonstrations, such as that of the danger of certain popular kinds of Stock Exchange gambling and the like, are decidedly useful."

But, *surgit amari aliquid*, in a *Saturday Review* critique, "Certain old fallacies of the mathematical expostulator with those who gamble" are "as rife as ever in Mr. Proctor's work"; perhaps even "they are more rife than ever, owing to Mr. Proctor's well-known 'cocksureness,' and his constitutional inability to conceive that any one who differs with (*sic*) him can possibly be right."

In passing, though far from me be the presumption of imagining that a *Saturday Reviewer* can possibly be mistaken, I have been so much in the habit of doubting my own conclusions—so careful in lectures, essays, and books to suggest caution and introduce again and again expressions of doubt—that I rather wonder how I come to be well known for "cocksureness." I know the Hampdens and Parallaxes, against whom I have had to maintain the cocksureness of certain scientific theories which are *not* mine, think me "cocksure" to a degree. But I doubt if even a *Saturday Reviewer*, in one of his most rampant moods, could point to a case in which I have been "cocksure" about anything not admitting of mathematical demonstration—like the Copernican theory on the larger scale and the solar theory of the corona, or the selections of stations for observing Venus transits, on the smaller. A reviewer, however, who expostulates with all "mathematical expostulators," and that, too, about matters purely mathematical, ought to know a good deal about cocksureness.* Indeed, one would be disposed to exclaim just here, were not the quotation somewhat musty, *Quis tulerit Gracchos de seditione querentes*? If a *Saturday Review* critic can be capped for cocksureness, where in creation is the cocksure customer who can cap him?

This, however, is a digression.

The modest reviewer goes on to remark that, like all the mathematicians whom he ever knew to discourse on chance and luck, "Mr. Proctor appears to be under a delusion as to the actual meaning of the notion—the superstition, if he likes—of luck." (Of course it is not conceivable that all the mathematicians may be right, and the *Saturday Review* mistaken, about this notion or superstition.) Where I and all the mathematicians have gone wrong, it appears, is in overlooking the fact that the man who buys a ticket in a lottery, or wagers money on a horserace, does it because he has a chance of getting a large sum by risking a small one, and is not troubled by the circumstance that he has to pay more than the true mathematical value of his chance. "Stranger," said a western farmer to a man who reasoned with his son about the folly of intemperance, "your argeyments air all right, and I ain't no fault to find with the way you put 'em, ef you was a reasoning with any one else; where you slip up is, you ain't nary a notion what a dog-goned fool you're a talking to." That farmer, though, probably knew his son better than the temperance man did; whereas I think I show in my book a tolerably clear appreciation of the folly of gamblers. Again and again I dwell on the very point on which the *Saturday Review* insists, rightly enough, except in pretending to correct me about it. The demoralisation on which I dwell so persistently throughout my book is most clearly shown by the very circumstance that men bite so blindly when offered a chance of a large prize for a small sum risked. "Gambling," says the *Saturday Review*, "is justified of her children," because the chances of growing rich are not offered them at mathematical odds, though if they were plentiful at those odds "Mr. Proctor would be right in denouncing the folly of those who take them at other" odds. But, as a matter of fact, I have not denounced the folly of those who take chances at unfair odds, but the iniquity of those who offer them; and I have urged as the chief reason of my denunciation that, in so doing, the rascals take advantage of that very weakness which the *Saturday Review* says I overlook.

Mr. Richard Babley, better known as "Mr. Dick," when asked to explain a certain piece of folly, said he supposed it was done "for pleasure." The *Saturday Review* explains with equal simplicity that gamblers play their foolish tricks for profit. But Mr. Dick was a little crazed; a *Saturday Review* critic should know better.

My critic says "in vain" do mathematicians show that in a series of mathematically equal chances some must repeatedly win largely and others as repeatedly lose. A man might accept this, it seems, and yet be a firm believer in luck and a confirmed gambler. Of course he might; there is no limit to the possible inconsistencies and incongruities of gambling. Yet even such a fool as my critic imagines

* If I repeat this hateful word it is perhaps chiefly because the *Saturday Review* attributes to me "crudity of phrase," and I want to show how curiously crude is my critic's own phraseology. It is a compliment to be corrected for crudity of phrase by a writer of so strange a taste in such matters.

would hardly reason (save the mark!) as this particular fool is supposed to do. "I say that some, perhaps not all, of these men will be lucky men. I can't prove it. You can't disprove it. My belief and your demonstration are in different planes, and don't touch each other." Mr. Dick could hardly beat this "mystical order of thought," as my critic very properly calls his nonsense. How can such a matter be better dealt with, if mathematical reasoning is rejected, than by actual trial? The test *has* been applied in multitudes of cases, and always with results confirming the mathematical theory of the matter. Yet for the general public there is, perhaps, no better answer to the *Saturday Reviewer's* suggestion that there are not only men who have been lucky (as I point out), but men whose luck is something which may be depended on (which is what I and all mathematicians deny), than the well-known fact that not one of the gambling and speculating herd who have been noted as examples of long-continued luck has failed to come to grief in the long run. I exclude, *bien entendu*, those who have been called lucky, but have in reality been simply rascals. They often grasp their ill-gotten gains to the bitter end.

With characteristic impertinence the *Saturday Review*, in beginning to comment upon the morality of gambling, speaks of that as ground into which, as it is not mine, I had no business to venture. I should like to know why this ground is not as much mine as it is any one else's? Can those who glibly quote, "*Ne sutor ultra crepidam*" give any reason for saying that one man has a better right than another to deal with moral questions?—always excepting criminals, and perhaps certain classes of critics. Questions of morality are fair subjects for all honest men to deal with, and I have yet to learn that the study of science is calculated to warp a man's moral nature so that he would be apt to decide wrongly about moral questions. So far as my critic's arguments are concerned, however, they may be disposed of by the simple admission that they would be just enough if I had maintained gambling to be criminal, instead of merely suggesting that it is immoral. The reviewer does not seem to understand what is meant by morality. (For example, it is immoral, but not criminal, to pervert the truth.) That he sneers, however, at Mr. Herbert Spencer, while he jeers at my views about the morality of gambling, would tend considerably to console me if I needed consolation, which, somehow, I scarcely seem to do.

My critic honestly thinks, I dare say, that he has me on the horns of the whist dilemma he offers me. If betting with superior knowledge is unfair, how about "Mr. Proctor's fondness for whist? Is not the superiorly knowing whist-player fraudulent?" And if the whist-player is honest who wins money through his superior skill, must not the bettor who offers or asks odds such as he knows to be incorrect be honest, too? I need not, so far as I am personally concerned, select either horn of the dilemma. For all my whist-playing for money, limited as it has been, has been against equal skill or, in my salad days, against skill superior to my own. When I argued, as my critic quotes, that "if inferior players choose to play on equal terms, they do it at their own risk," I was considering my own case when, rather than spoil a rubber, I have consented to play for sixpenny or even (!) shilling points, in a company unwilling to play for "love." Since I have learnt something of the strategy of the game I have only twice consented to play for even shilling points. On one occasion I met three of the strongest players of the Manhattan Club, New York, and on the other three players of the New Orleans, one of my opponents being Mr. Trist, the inventor of the American leads, so much admired by "Cavendish." (It may interest readers to know that I won about as much in one encounter as I lost in the other.) The only club I have ever cared to join played threepenny points and sixpence on the rubber, and I was present at barely one of their weekly meetings in ten. In all my journeys at sea, since I learnt something of the game, I have declined to play even for sixpenny points.*

Dealing with my critic's remaining comments, I need remark only that, while he does not think my book likely to do much good, he asserts the unlikelihood, nay, almost denies the possibility, that any book on chance can do much good unless written "by one prepared to admit to the full the existence of 'luck'"—a novel idea indeed!

Summing up his criticism as an example of the average *Saturday Review* style, I note that—

First, this critic lightly ascribes "cocksureness" to me, who have again and again expressed doubts about my own views, or have modified them as occasion suggested, while himself exhibiting cocksureness in such amazing degree as to reject the verdict of "all the mathematicians" who have ever dealt with the subject of probabilities—though this is a subject purely mathematical, and about which he himself manifestly knows nothing!

Secondly, he attributes crudity of phrase to me, though citing no instances; but he shows the value of his opinion on such points by using in short articles such crude phrases as "cocksureness," "mathematical expostulator," "superiorly knowing," "*ex hypothesi* uncircumventible," "aleatory pleasure" (for love of dicing), "cocksureness," &c., to say nothing of such sheer blunders as "differing with" for "differing from," "stark man" for "powerful reasoner," "valuable" for "effective," and the like.

Thirdly, while pretending to regret that probably my book will not keep many from gambling or protect many from dishonesty, the *Saturday Review* deliberately justifies the gambling spirit, and even encourages that more obvious immorality, the practice of wagering, speculating, and gambling generally, with superior knowledge of the probable event.

Fourthly, pretending to reason about right and wrong, my critic does not hesitate to attribute to me ideas (such, for instance, as my supposed wrong notions about the hopes actuating gamblers who trust in luck) which he must well know that I have not expressed, but the reverse.

Such, on the average, is *Saturday Review* criticism, unless a special aversion is to be wronged, as when Mr. Herbert Spencer is attacked, or its great political *bête noire* is to be insulted, or else some special friend is to be puffed, as when certain capital books for boys are foisted on the public as great works of imagination.

As to the ideas I have advanced in "Chance and Luck,"

* I have taken considerable interest in watching the progress of play with a very keen opponent—an excellent player of his own hand—in order that I might recognise how far the effects of chance (often very marked in an evening's or even in a week's play) are corrected in the long run. My wife and I (she is the best player of her sex I have ever known) have played since I began to keep a record of results about 3,500 points against the opponent in question, he taking three partners at different times, one of whom is that trustworthy partner, Mr. Single-dummy. Combining the results, we are just over 400 points ahead, his best average being obtained with Single-dummy as partner, where he is 155 points behind on a total of 1,547 made. It should be noticed that we play for tricks only, not counting either honours or rubbers. This, of course, gives a much greater advantage to combined play than when honours, and the chances connected with the rubber tend to equalise matters. Still, we should not be so far ahead on the Single-dummy play were it not for an inveterate habit our opponent has of visibly rejoicing over a good hand and as visibly sorrowing over a bad one. Nothing but such records as I have recently kept would have shown me how very importantly such indications affect results.

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even the narrowest (unless it be considered the broadest) of my views, the real immorality of gambling, the experience of all civilised nations that gambling whenever encouraged has proved demoralising, and has had to be checked, affords tolerably good proof that there is something immoral in its very nature; for that must surely be tinged with immorality, which, when left to itself, proves invariably demoralising. But I repeat that I have not hoped, and cannot reasonably hope, that my book will correct the folly of the many. The wise never gamble or speculate (outside such speculation as every business or pursuit in life necessarily involves. The foolish will continue to gamble, probably, till the world's end. (A daring "joker of jokes" once said that such men would wager on the tone of Gabriel's last trump.) But, as I say in my preface, I hope that some may be influenced for good; a few who are between the wiser and the more foolish may join the better section if they are shown the unwisdom and immorality of gambling ways.

NOTES ON AMERICANISMS.

By Richard A. Proctor.

Gad. This old word for a spike or pointed instrument—akin to "goad"—is gravely given by Bartlett as an Americanism still "used in the North of England." It is still used in English dictionaries, and has been used from the days of Johnson, through Walker's time, onwards until now.

Gall. (1) This word, which, though used in England for bitterness of mind, has yet a peculiar American use for something between cool impudence and malignity, is not mentioned by Bartlett. The commonness of this usage is decidedly American. "You show gall enough," a rude man in America will say to his mother-in-law, sometimes even to his wife; where an Englishman equally wanting in politeness might say, "I like your cheek!" or use some similar vulgarism. (2) "A soil of vegetable fibres," says Vignoles, "matted and treacherous to the foot, unpleasant as well as dangerous to crop."

Gallinipper. A large gnat common in the Southern States, somewhat resembling the mosquito in proclivities and in appearance, but larger.

Gallivant. Because this good old English word is used in America precisely as it has been used from time immemorial in England it is included by Bartlett among Americanisms. The same remark applies just here to "galloping" (consumption); to "gallows" (for fine, adjectively or adverbially, this costermonger slang being gravely described as a New York expression); to "gallowses," for trouser-braces, or "suspenders," as Americans call them; to "galoshes," for overshoes, given as "a term universal in Canada"; to "gambree," for a hipped roof; to "gap" (used for openings made in mountain regions by rivers, to openings in fences, &c.); and to a host of other words beginning with "g." Bartlett is in fact particularly weak in regard to the English use of words which he includes among Americanisms. It does not seem to me that the occasional or local use of certain words in England should prevent us from regarding their general and colloquial use on the other side of the Atlantic as bringing them into the rank of Americanisms. But if words as commonly used in some special sense in England as in America are to be classed among Americanisms, I can see no reason why a full English dictionary should not be brought out as a dictionary of Americanisms.

Galoot. A common fellow, low-class person; the word does not seem always limited to the male sex. This word seems decidedly an Americanism. I should imagine that if found anywhere in the old country it would be in Scotland or on the border; for it seems to be of French origin, like the Scottish "galopin," an errand-boy, a common lad, and "gamin," a street-boy, young blackguard. But I know of no such word now in existence in the French language. Possibly someone acquainted with French argot can tell us of one. Everyone remembers how Colonel Hay's Jim Bludsoe, when he "saw his duty a dead sure thing," said—

> I'll hold her nozzle agin the bank
> Till the last *galoot's* ashore

(presumably including the female passengers). But in the following quotation from "Grandpa's Soliloquy"—a poem unknown to me, but I borrow here from Bartlett—the word seems restricted to the male sex, even as the words "galopin" and "gamin" have always been:—

> It wasn't so when I was young,
> We used plain language then;
> We didn't speak of them *galoots*
> When meaning boys and men.

Not knowing the context, I am unable to say whether the soliloquising grandfather here simply objects to the use of such ungrammatical slang as "them galoots," instead of saying "boys" or "men," or whether he objected to certain folks, properly called "galoots," being included when genuine boys and genuine men were spoken of. In the latter case the word "galoot" would seem to bear an unpleasant significance; in the former, and more probable, case (only, if that was meant, "them galoots" should have been put between *guillemets*) it would seem that the slang use of the term "galoot" is of comparatively recent origin.

Gam. A social visit: borrowed from seafaring terms. I cannot say I have ever heard the word used. But Browne's "Whaling Cruise" states that when two whalers meet in any of the whaling-grounds, it is usual to have a *gam*, or mutual visit, for the purpose of interchanging the latest news, &c.

Gander Party. A masculine social party. I once heard a lady in America speak of a club as a "gander gang," a term pleasingly alliterative if not strictly complimentary.

Gander-pulling. "A brutal species of amusement practised in *England*," Bartlett says, "as well as in Nova Scotia." I have never heard of "gander-pulling" being practised anywhere in Great Britain or Ireland, and must conclude therefore that Bartlett means New England. Cock-fighting is bad enough, but "gander-pulling," as described in "Sam Slick," and as more fully pictured in "The Prophet of the Smoky Mountains," is about the most disgustingly brutal form of sport it ever entered into the minds of men to invent. It must have been derived from the more barbarous among the Indian races. A goose is hung head downwards from a swinging rope on the branch of a tree, and a set of ruffians, riding under the suspended goose at a gallop, try to pull off the poor creature's head as they pass. I decline to degrade these pages by a fuller account of this disgusting and brutalising sport—no! scarcely brutalising, for no one could by any possibility be made more brutal than he must already be to engage in it.

Gar. A kind of pike found in Southern and Western rivers—sometimes called the alligator gar, perhaps because of the fact that it has been known to fight the alligator. Its business name is the *Lepidosteus*, formerly the *Belone truncata*. It is interesting from its kinship with the ganoid scaled fishes plentiful during Palæozoic and Mesozoic ages—as the *Pholidophorus*, *Cheirolepis*, *Platysomus*, &c.

Garden. The use of this word in America is peculiar, though Bartlett (not knowing the English usage, in all probability) makes no mention of it. What we in England

most commonly mean when we speak of a "garden," Americans call a "yard"—a term usually limited in England to inclosed spaces which are not planted with trees, shrubs, or flowers—and perhaps most generally understood to signify an inclosed space which is wholly or partially paved. For instance, a school playground would hardly be called a "yard" in England. The word "garden" in America is applied to what we would call a market garden either for vegetables or flowers. The word "orchard" is used much as with us.

It is hardly necessary to tell the philological reader that the words "garden," "yard," and "orchard" are closely akin—orchard, however, being a compound—*ort-yard* or *wort-yard*. The following series of words may be worth noticing—it includes, however, but a few of the words akin in divers languages to our "yard" and "garden":—

ENG. *Garden, garth, yard, or-chard.* (*Greensward* must not be confounded with these words, as if greens-ward; it is green-sward, "sward" being an old name for "skin" or "rind.")

SAXON. *Geard, ortgeard, wyrt-geard*; OLD ENGLISH, *gearth.*

GOTHIC. *Gards, aurti-gards.*

GERMAN. *Garten*; LOW GERMAN, *garden.*

FRENCH. *Jardin*; OLD FRENCH, *gardin.*

DANISH. *Gaard, urtgaard*; ICELANDIC, *garthr.*

LATIN. *Hortus.*

GREEK. *Chortos.*

The same root is found in *guard, guardian, gird, girdle, ward, warden*, and other kindred words. *Yard* the measure of length, *yard* in *yard-arm, goad, gad, hasta* (Lat.), and many other words, some of which have no apparent association with "guarding" or with *girding* or *girdling*, belong to the same family.

Query. What is the derivation of the name "Hard," used for a pier or landing-place for small boats?—as "Admiral's Hard," at Plymouth. This word does not appear in any English dictionaries I have, though it is in Webster. It may be akin to *yard*, as such landing-places are partly inclosed, or *girt* round. In a *dockyard* we see that a space so inclosed for ships is called a *yard*. Marryat uses the word *Hard* in "Peter Simple"; and it is quite commonly understood in the sense of a landing-place at such places as Plymouth, Portsmouth, &c. The word "hard" is also applied to fording-places where a river bottom is hard.

GARRISON, for "Fort," seems to be a specially Western usage—continued long after a soldier has been in a place which was once a fort.

GAT or GATE, for a gap, is a usage borrowed from the old Dutch days. Washington Irving tells how from the old *Helle-gat*, or *Hell-gap*, there came *Hell-gate*, afterwards altered "by the mealy-mouthed to *Hurl*-gate, forsooth"! (Shakespeare has the "gate of hell," be it remarked in passing, and Milton speaks of the gates of that abode of the condemned, in giving his marvellously unscientific account of the transit of Satan from hell to earth—with gravity acting anyhow.)

GATHER. Used in the West instead of "take up" or "pick up," and appropriately pronounced "gether."

GAUM (or GORM). To smear. Still used in the eastern counties. "If Mrs. Gummidge didn't up with a bucket and lay it over that theer ship-carpenter's head," says Mr. Peggotty (or to that effect), "I'm gormed, and I can't say no fairer than that"—using the word for "smeared," as the word "darned" is used in divers parts of England and America, not as intended to suggest any real "darning" or "smearing," but simply as a good mouth-filling word, suggestive of that eternal condemnation of the wicked which has been so long considered an appropriate subject to swear by.

GAWNIUS. A gawk, *quasi lucus a non lucendo*; a "gawnius," because not a genius.

GENT. This word is used in two senses in America, one interesting, the other fearful; the interesting usage being apparently a true Americanism, the fearful one being common also in England.

1. *Gent*, for genteel, is interesting as being so exceedingly old. Said Chaucer five centuries ago:—

> Fair was this yonge wife, and therewithal
> As any weasel her body gent and small;

and now—or yesterday, at any rate (*circiter* 1704)—"Law you," we find in "Madam Knight's Journal," "it's right gent; it's awful pretty." The usage is French—*C'est bien gentil*, it's very pretty. Bartlett puts the word "gent," thus used, as equivalent to "genteel"; but though "genteel" might be thus used with propriety, it is seldom associated with the idea of prettiness. More often "genteel" is used for smallness, as "a genteel figure"; but this is not precisely the same as even Chaucer's usage in the above passage. For whereas "gent" with Chaucer means neatness and prettiness, "genteel" used of the figure implies not only that the figure is neat, but that in neatness there is what is understood by "gentility." A small figure is considered genteel, and therefore, though not quite logically, a genteel figure is understood to signify a small one. In Chaucer's time the French language had evidently adopted *gentil* as equivalent to neat and elegant. The Old English "gimp," from the Welsh "gwymp," may have suggested the monosyllabic form "gent."

2. "Gent" is used substantively as in England—a supposed abbreviation for "gentleman," really another name for the awfullest of awful cads. We shudder and pass on.

GENTILES, as used in Utah to distinguish from the Mormons those who are not Mormons, must now be regarded, I suppose, as an Americanism. When I lectured at Salt Lake City, I found myself spoken of in a Mormon paper as "a Gentile lecturer"—much as an æsthete calls an outsider a Philistine, or as a racing man speaks of a non-racing man as an outsider.

GENTLEMAN. This word, like its companion word "lady," is so used in America that persons of respectability are relieved when they find themselves called "men" and "women." A negro boot-black is "a coloured gentleman." A respectable uncoloured person is "a white man"; and to be called "a white man" is to be spoken of with respect; to be called in America a "gentleman" is pretty nearly an insult. Whenever any one says to me, "Let me introduce this man to you," I know the chances are I shall be introduced to a good fellow; but when I hear the ominous words, "Here is a gentleman I should like to introduce to you," I know I am to make the acquaintance of a person engaged in politics or some kindred form of swindling.

In the East, however, they still try to keep up the old use of this word to distinguish a man of gentle breeding and good position from the uncultured. How successfully they do this may be inferred from those most hateful "gentlemen" who appear in Howells' novels, surely the greatest cads literature has yet produced, and from casual remarks in so-called "society" papers. An amusingly suggestive story appeared lately in one of these papers. A lady, described as "a leader of society in Washington," remarked that she knew X was not a gentleman, for she noticed that "he lifted his coat-tails as he sat down; a real *gentleman* never

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attends to such matters"—the fact being, I should have thought, that in such trifles a gentleman does as he pleases or as convenience may suggest, no real lady ever noticing, even though she may chance to have seen, what he does.

Gentleman Turkey. A turkey cock. A usage in the Western States much favoured by "nice persons," to whom Sidney Smith's definition of prudes as "nice persons with nasty ideas" is pre-eminently applicable.

WIND MYTHS.

By "Stella Occidens."

In Russian folklore a being resembling Hulda in her worst aspect plays a prominent part. Her name, Baba Yaga, means a quarrelsome, scolding old woman; and she is for ever doing some spiteful or malevolent action. According to Ralston, her appearance is that of a "tall, gaunt hag, with dishevelled hair." Sometimes she is seen lying stretched out from one corner to the other of a miserable hut, through the ceiling of which passes her long iron nose. The roof of the hut is supported by "fowls' legs," and stands at the edge of a forest towards which its entrance looks. When certain words are spoken the hut revolves, and turns its back to the forest.*

Baba Yaga is sometimes represented under the appearance of the mistress of a house which stands in a courtyard inclosed by a fence made of dead men's bones. When she goes abroad "she rides in a mortar, which she urges on with a pestle, while she sweeps away the traces of her flight with a broom." She generally kills people in order to eat them, and out of their bones she makes the fence which surrounds her house. Their skulls are used as lanterns, in which she places flaring torches at night. A story is told of a young girl who once visited her, and was offered a piece of a human arm for her dinner. We are not told if she appreciated her meal; but it may have been so—there is no accounting for tastes.

One of the most interesting Russian folk-tales is that of Vasilissa the Fair. She had a cruel stepmother, who hated her because she was more beautiful than her own daughters. She treated Vasilissa very unkindly, and made her do all the hard work. However, Vasilissa always did all she had to do because she had a doll who helped her. At her father's death he left this to her, and said, "Keep it always by you, and never show it to anybody. Whenever misfortunes come upon you, give the doll food, and ask its advice. When it has fed, it will tell you a cure for your troubles." The doll always helped her when she did as her father told her, and she would carefully follow its advice. The stepmother went to live in a new house on the edge of the forest, in which Baba Yaga lived, and she would make every excuse to send Vasilissa on errands through the forest so that she might fall into Baba Yaga's power. One autumn evening, as the two sisters and Vasilissa were working, one of the sisters snuffed the candle and put it out. The stepmother had told her to do this, so that she might send Vasilissa to Baba Yaga's house to get a light. The sister, who was making lace, said:—

"My pins give me light enough; I shall not go."

And the other sister, who was knitting, said her knitting-needles gave her light enough, and she would not go.

"Vasilissa, you must go for the light," they both cried out together; "be off to the Baba Yaga!" and they pushed her out of the room.

Vasilissa went to her room, and taking her doll, she gave it a good supper, and asked its advice.

When the doll had eaten a good meal its "eyes began to glow like a couple of candles."

"Never fear, Vasilissa dear!" it said. "Go where you're sent. Only take care to keep me always by you. As long as I'm with you, no harm will come to you at the Baba Yaga's."

So Vasilissa dressed herself, put the doll in her pocket, and started on her walk through the forest. As she walked a horseman galloped by. He was dressed in white, and rode a white horse, and the day began to break. Further on she met a second rider, dressed in red and sitting on a red horse, and the sun rose.

Vasilissa walked all night and the next day, and towards evening she came to Baba Yaga's hut. The fence around it was made of dead men's bones; on the top of the fence were stuck human skulls, with eyes in them; instead of uprights at the gate were men's legs; instead of bolts were arms; instead of a lock was a mouth with sharp teeth. Just then another horseman rode by. He was black, dressed in black, and rode a black horse. He galloped up to Baba Yaga's gate and disappeared, just as if he had sunk through the ground, and night fell. The eyes in the skulls on the fence began to shine, and made the place quite bright. Soon a terrible roar was heard in the forest. The trees crackled and swayed about their branches, the dry leaves rustled, the wind sighed and moaned through the trees. It was Baba Yaga, who came sweeping through the forest trees, riding in a mortar and urging it on with a pestle. As she drove up to her gate she snuffed the air around her, and said: "Faugh! Faugh! I smell Russian flesh! Who's there?"

Vasilissa was nearly frightened out of her wits by this time, but she curtsied to the old hag, and said,—

"It's me, granny. My stepsisters have sent me to you for a light."

"Very good," said the Baba Yaga. "I know them. If you'll stop awhile with me first and do some work for me I'll give you a light. But if you won't I'll eat you."

Vasilissa, with the assistance of her doll, did all the work that was given her, and on the third day Baba Yaga gave her one of the skulls with blazing eyes from the fence, stuck it on a stick, and told her to take it home to her stepsisters. When she reached home it was bright day, and she was going to throw away the skull, but a hollow voice from the skull said:

"Throw me not away; carry me to your stepmother."

She was gladly welcomed at home, for they had had no light since she went away. They carried the skull into the sitting-room. The eyes glared at the stepmother and her daughters, and shot forth flames. They tried to hide themselves, but by morning were burnt to cinders. Only Vasilissa escaped. She eventually was married by a prince, took Baba Yaga into her service, and to the end of her life always carried her doll in her pocket.*

Another characteristic story is told about Ivanushka, the son of a *baruinya*, or lady, who was carried away in a whirlwind by Baba Yaga. His three sisters searched for him everywhere, and though each would find him yet they could not bring him home. They made Baba Yaga go to sleep by smearing her eyelids with pitch (a strange cure for insomnia), but when they were half-way home she awoke, and, chasing them, nearly scratched and tore them to pieces. At last the younger sister went to look for her

* "Russian Folk-tales," Ralston, p. 146. [Except for the fowls' legs, the account would do for an observatory of modern times, the telescope being the lady's long iron nose.—Ed.]

* Ralston, "Russian Folk-Tales," p. 158.

brother. Now Baba Yaga had a cat called Jeremiah, who was her favourite companion, and who had been the cause of the two sisters' failure. The younger sister made friends with Jeremiah by giving it butter, and tying a pretty ribbon round its neck. She found it seated on a stool opposite her brother, telling him Shazhas, or stories, and singing him songs. When the Baba Yaga awoke she told Jeremiah to scratch her eyes open, but the cat coolly told her to wait awhile till he had eaten some of the good butter the little girl had given him. Baba Yaga was furious, and threatened to crush him to death, but Jeremiah, after removing himself to a safe distance, spoke to her as follows: "As long as we have lived under the same roof, and as much as I have done for you, yet you have never once treated me kindly, whereas the little boy's sister has given me butter and tied a pretty ribbon round my neck."

In another similar story Baba Yaga became so angry with her butter-bribed cat that she pinched him to death for not waking her up in time.*

In the North, where the winds are cold and bleak, it is quite natural to look upon them as malevolent beings, full of mischief and spite. We have already observed this belief in the German, and the same appears to exist in the Russian folklore. Among the peasants the whirlwind is supposed to be a Vikhor, or bird. Once a certain king and queen went for a walk in the garden, and the Vikhor bird came and carried the queen away. Her three sons set out to look for her, and the youngest, Prince Vasily, found her. The queen concealed him, and Vikhor came flying in and spoke angrily to the queen. She gave her son a hint to come out from his hiding-place. He greeted Vikhor, and caught hold of his right little finger. Vikhor tried to shake him off, but in vain. At last Vikhor fell to the ground, and became a fine yellow sand. Prince Vasily kept the little finger, but, scraping the sand together, he burnt it in the stove.†

In Poland, when the whirlwind sweeps up the loose sand, it is supposed to be the evil spirit dancing. The magicians throw a sharp new knife into the sand to wound the spirit. A man who had a spite against another plunged such a knife into his threshold, and condemned him to ride for seven years around the world on a whirlwind. It is said that the whirlwind lifted the man, who was making hay-cocks in a meadow, and bore him away in the air.‡

In Norway the north wind is supposed to be a good-natured giant; but when a violent wind arises offerings are made to him to pacify him. At Bamberg it is said that an old woman snatched up her meal-sack whilst a storm was raging, and, opening the window, emptied it out, saying, "Dear wind, don't be so wild; take that home to your child!" She looked on the wind as a greedy lion or fierce wolf.§

In Norway the peasants say that the "giant stirs his pots" when there are whirlwinds or foul weather. In Sweden the popular belief is that a violent whirlwind is the Skogsrä, or wood-wife, who shakes the trees even to breaking, and rushes violently through the air. The Slavonians think that the whirlwind is a female demon, who flies up in the dust which the whirlwind raises. According to another legend, the whirlwind was a noble damsel who loved the chase above everything, and made havoc of the husbandmen's crops, for which she is doomed to ride along with the storm to all eternity. This recalls the Diana huntress deities and Holda.‖

In conclusion, it is interesting to note how the southern myths differ from the northern—as greatly as the warm southern breezes differ from the bleak northern winds. The following Italian story is a good example:—

A fisherman who had had bad luck for some time, overcome with anger, cursed the Madonna and the saints. Suddenly a certain person (who, we are told, was the enemy of mankind) appeared to him, and promised him good luck if he would give him the next son he had when that son should be thirteen years old. The man consented, but when the enemy came to claim his prize the fairy Colina duped him and carried off the boy to her own palace. Lionbruno (the name of the boy) became her husband, but after a while wished to visit his home. On the way he had many adventures. After a long journey he came to a dense forest. Here he saw a little old hovel surrounded by dense wild shrubs, and with a little ivy-covered door. He could only reach it after climbing over inaccessible rocks. He knocked at the door, and an old woman opened it, who told him that she was Borea, the northwind. When she saw Lionbruno she asked him if he was not afraid, for this was the house of the winds, and if her four sons should return they would devour him. However, she hid him in a chest, and soon a loud noise was heard in the distance. It was the winds returning, and the noise grew louder and louder, as if the trees and branches were being swept away.

When they entered they began to say, "What smell of human flesh is here?"

"Here, Christians, Christians! Where is there any smell of human flesh here? Who would venture here?" said their mother.

Sirocco would not be convinced. At last Borea pacified them by promising to show them a man if they would not harm him. When she brought him out they puffed and blowed about him, and asked him many questions. They kept their promise and did not hurt him, and after a while Sirocco wafted him to the fairy Colina on a gentle breeze.*

In a modern Greek folk-song the winds are under the command of a sparrow-hawk, and they obey him. In another a mother sets three to watch her son while he sleeps. In the mountains the sun, in the plain the eagle, on the sea the brisk lord Boreas; the sun sets, the eagle goes to sleep, and Boreas goes home to his mother. From the context we understand that the eagle is the sweet soft wind, and Boreas the cool north wind.

* Ralston, "Russian Folklore," p. 177.
† Ralston, "Russian Folklore," p. 232.
‡ Grimm, "Teutonic Mythology," p. 632.
§ Grimm, "Teutonic Mythology," p. 636.
‖ *Ibid.* p. 633.

HOW AMERICANS VIEW ENGLAND.†

WE often wonder whether the untravelled American's idea of Great Britain and the Britisher is as erroneous as John Bull's notions concerning America and Americans. To the American, England seems a phenomenal island, peopled by a race of men gifted with qualities approved by the centuries as "the fittest." For English ideas have survived. English purposes and intentions have ripened into immutable facts. English oppression has prevailed over the liberties of other peoples in all quarters of the globe. English avarice has piled up countless millions sterling. English commerce has gained a firm foothold in all the marts of the world. English armies have won laurels on thousands of battle-

* T. F. Crane, "Italian Popular Tales," p. 143.

† From a leading American paper "out West." In places, this article seems written in happy unconsciousness of the fact that races retain racial qualities for more than the six or seven generations which separate the Americans from the Old English parentage.

fields. English traditions, surviving the institutions they typify in Church and State, like the chrysalis that lately held the butterfly, though dead and soulless, have retained tinsel, glitter, and shapeliness. English scholars, peers of the Pagan masters, have given to modern times a literature robust with Saxon heroism and sanctified by an inspiration as pure as the whisperings of the muse in earlier days. English philanthropy has exemplified the innate nobility of the English heart, mothering within the scope of its ministrations the lorn and the outcast of all nations and climes.

But with all this, clouds of selfishness have ever obscured the British sun, and a vein of malevolence has predominated in British national character. An oppressor of the weak, her armies have been the butchers of countless defenceless peoples, sacrificed upon the altar of her ambition and avarice. Posing as a bulwark of Christianity, England has despoiled the children of the faith. English hands have for centuries dabbled in the blood of Christians. Themselves boastful of their liberties, for ages Englishmen have heartlessly forged chains for their neighbours, and ruthlessly slaughtered as recalcitrants and traitors such of their countrymen as scorned to bend the knee to wanton power, even though enforced by the sword and the gibbet. No century of English history but has witnessed her armies despoiling innocent communities, overturning inoffensive principalities, and her people clamouring for the blood of the nations despoiled by her cruelty. English tyranny has lost no opportunity to lay the weight of its relentless hand upon the weak and the defenceless. English cunning has over-reached the designs of the strong and the resolute. In peace a shopkeeper, with eyes intent for barter; in war, depending as much upon the power of her gold to corrupt as upon the power of her armies to vanquish her foes, Great Britain has more deeply graven her image upon the tablet of modern civilisation than any other nation of modern times.

This, in brief, is an American's opinion of Great Britain and the Englishman. It goes without saying that the American never wearies of criticising English classes and English customs. "Her Majesty," so rendered by the English royalist, who looks upon kingly blood as akin to divinity, we regard as a very fat and very benevolent old lady, neither better nor worse than any intelligent housewife, and not nearly as useful. The princes and princesses of the royal household we regard as so many appendages of an obsolete system, a trifle expensive, and entirely superfluous in a civilisation peculiarly eclectic in its instincts and methods. The lords and ladies we regard as a lower species of the same genus—not quite as respectable, and, if possible, more burdensome and useless to society.

THE WILD WEST; AND HOW ENGLISHMEN VIEW AMERICA.*

JUST now the Hon. Wm. F. Cody, better known as Buffalo Bill, is edifying the Londoners by daily performances of his Wild West combination, and the English press is printing columns of notices of the Nebraskan and his show, referring to it as a life-like reproduction of life in Western America. As one strong point of evidence this would lead to the belief that the English do really know less of America than the most careless Americans do of England.

* From the same Western paper.

The fact is that every American who bothers his head with the matter is glad that Buffalo Bill is having such a success, and this satisfaction is inspired by American admiration for anything that makes money quickly. Not that Americans care more for money than other civilised people—indeed they care less—but the mere fact that one of them makes a huge fortune by some big push is pleasing, and we seem to care very little whether he does it by a real-estate boom or a patent on a chestnut bell.

Thus, while Americans are pleased with Buffalo Bill's success, the smile is broadened in contemplation of John Bull's gullibility, for the fact is that the Wild West show no more represents America than the "Great Parisian Circus" would represent France, or than the play of "Romeo and Juliet" would present the phases of a modern love scrape.

The Wild West is as much a show to the people of Chicago as it is to London, and would draw as big a crowd, proportionately, in Cheyenne as it does anywhere else. The Deadwood coach, and the scenes with which Buffalo Bill surrounds it, are not prevalent in America, and only represent an incident in the history of the West, the same as if an English panorama should come to America and give among other pictures something presenting the plot of Guy Fawkes as a part of the history of England. In short, the Wild West does not represent America any more than Wild Bill's dress and hair represent the costumes which prevail in Missouri.

Yet, without having seen this personified creation of one or more of Ned Buntline's "yaller"-backed novels for several years, it is amusing to Americans at this great distance to see Buffalo Bill coddled by the Queen, fêted by the titled, lionised by London, and written about in the English press as the Hon. Colonel Cody, a member of the American Congress, and a high officer in the American army. And we shall have a big laugh with Bill about it when he gets back, for, in the democratic rank which prevails in this country, history will repeat itself upon Cody's return. He will be the Hon. Colonel William Cody until he strikes our shores; then he will be Colonel Cody perhaps as far west as Chicago; Buffalo Bill at Omaha; and "Bill, old boy," when he gets among his familiars at North Platte.

But in it all, and with it all, he will be a handsome, good-hearted, clear-sighted, and plain-mannered man of the West, who obtained his nickname by killing buffalo on a contract to furnish meat to the men who graded the Union Pacific, his military title as an honorary militia officer on the staff of the Governor of Nebraska, and his Honourable handle by once having been elected to the legislature of Nebraska, and at a time when he could not afford to take the seat, as he had other and more valuable business to attend to.

THE TOTAL SOLAR ECLIPSE OF AUGUST 19.

Although, as indicated in "The Face of the Sky" on p. 238, but little indeed of this phenomenon will be visible in this country; yet, as it will be observable in many parts of Russia fairly easy of access, we give a few details of the path of the moon's shadow over the earth. At Vitebsk, lat. 55° 11′ N., long. 30° 10′ E., totality will last for 2m. 23s.; thence the centre of shadow will travel a little to the north of Moscow; will pass through Jaroslav, lat. 47° 35′ N., long. 40° E., when totality continues about 2m. 30s.; to the north of Viatka (deviation of totality 2m. 50s.); across the Ural Mountains, and so into Russia in Asia; traversing which it passes over the Khirgan Mountains into Mongolia, and over Mantchooria and Japan into the Pacific to the north of Yedo. The maximum duration of totality (3m. 50s.) happens to the south-east of Lake Baikal. No effective observation of this eclipse will be obtainable from any point much to the west of St. Petersburg. Probably Vitebsk—which may be reached by the railway from Riga—is as easy of access as most stations.

Gossip.

By Richard A. Proctor.

The sensational announcement that the Star of Bethlehem had been seen near the zenith in Cassiopeia was doubtless, as I stated in last month's Knowledge, based on a mistaken idea on the part of the ingenious discoverer that, since Tycho Brahe had seen the new star of 1572 in the zenith, there the star would be seen again. But, finding that May is not the time for seeing Cassiopeia at night in the zenith, the faithful (and seemingly truthful) believer in the star of 1572 as the Star of the Nativity now announces throughout America, with much abuse of myself on *quasi*-theological grounds, that it was in the day-time he saw the star, using a method which the fogeydom of the professed students of astronomy would not allow them to think of. This wonderful method consists in the use of smoked glasses, to protect the eye from the glare of the sky, and also, in a manner not explained, in the use of reflecting mirrors attached to the telescope. Of course, says the discoverer of the Star of Bethlehem, "I did not expect to see Cassiopeia when below the horizon; but by means of these arrangements I have been able to see the constellation with the 'new star' in its midst, while still above the horizon in the day-time."

* * *

The only trouble is that, in correcting one error, the ingenious Professor Klein—such is the name and assumed title of the man—has fallen into another. Reminded that the constellations revolve annually as well as daily round the polar axis of the star sphere, and perceiving that, that being so, Cassiopeia, seen near the zenith in November, cannot be near the zenith in May or June, he has too hastily concluded, in his utter ignorance, that the constellation would be opposite the zenith, or far below the horizon, at midnight in the summer months. Were this so, he could of course safely pretend to have seen the new star by some novel device in the day-time; should the star be wanting when Cassiopeia came again into view at night, he could easily account for that by saying that in the meantime the star had died out. It has been, I expect, an unpleasing revelation to this worthy, that Cassiopeia does not pass below the horizon at night in the latitude whence he has so ingeniously observed the constellation in the day-time. So that, to save his credit for veracity, we must believe that the star shines for him brightly enough to be seen in the day-time, and goes out of view (for astronomers) so as not even to show the brightness of an eighth magnitude star at night! This seems to some degree improbable.

* * *

Mr. Haggard is to be congratulated on the resumption, in "Allan Quatermain's Story," of the style of writing in which he obtained a well-deserved success in "King Solomon's Mines." Both stories are capital books for boys, books, too, which men need not be ashamed to enjoy as thoroughly as the young folk. In such books a few mistakes in matters of detail count for little. We need not be troubled that the sun and moon do not usually behave as Mr. Haggard makes them behave in "King Solomon's Mines," or that a battle against forces numerically superior and equal in quality could not possibly be successful if conducted as Sir Henry Curtis conducts his battle with the forces of Queen Sorais and Nasta, in the later story. Both books remain exceedingly interesting even for those who recognise in them some such trifling absurdities; and though both are in places rather of the "blood and thunder" type, that, again, does not detract from, but rather enhances, their value as books for boys—aye, and for girls, too, and many grown folk also.

But an intelligent community must not allow too friendly reviewers to persuade them that "She" is other than false in taste and feeble in method (where it passes outside the book-for-boys style). "She" bears the same relation to what it was meant for that "Nana" bears to a healthy love story. It would have been well for Mr. Haggard if he could have explained that the work was the production of his boyish days when he was unable to distinguish good from bad in such productions as "The Epicurean" and its kindred. Unfortunately, and somewhat startlingly, he has to admit that he had never read Moore's two fanciful works (which one had thought every literary man must know well). It now appears that even the familiar "Peter Williams" has been newly discovered by Mr. Haggard since "Allan Quatermain" was written.

* * *

"Jess," "Dawn," and "The Witch's Head" indicate with tolerable clearness Mr. Haggard's limits.

* * *

Mr. Haggard himself tells us that he cannot write poetry, and so little thought anyone would suspect him of such weakness that he did not consider it necessary to mention that certain poetry in "Jess"—amazingly ill-placed, by the way—was written by another, even though that other was a woman and dead. He graciously acknowledges such matter in "Allan Quatermain," but only as "*put into rhyme* for him"—by his sister!

* * *

Three or four times during the last two years I have come across paragraphs in American newspapers, resembling the following from a New Orleans newspaper, but I have always supposed that the story told of mock modesty, really implying almost inconceivable impurity of mind, must be sheer invention:—

A pitiful case of mock modesty occurred right here at home last week. One afternoon a party of young ladies and gentlemen went out sailing on the lake. A squall came up, and as they were hastening in to shore they were hailed by some gentlemen whose boat had capsized, and who, in danger of drowning, were clinging for life to its slippery sides. It seems that these young men had been out for a deep-sea bath, and were consequently nude. Owing to the storm they had been in the water for a long while, and one of the number was seized with cramps, and his alarmed companions thought he would die before help came. Now, any ten-year-old child who has ever tucked up its pantalets and gone wading in a creek knows that a person being in the water and seized with cramps will probably die if not rescued. As the yacht came up to the distressed bathers they explained the situation to those on her, and begged that the sick man might be taken aboard and a boat sent from West End to their own relief. But the mock-modest young ladies giggled and blushed, and I daresay peeped between the sticks of their fans, while vowing and declaring that they couldn't think of such a thing. They giggled again, but did not think to look the other way, and expressed themselves as horrified at the bare idea of rescuing a nude man from death. They had no thought for the suffering of the groaning young fellow down in the water being upheld by his anxious, dismayed, and exhausted companions. They were too busy giggling and commenting on the awfully embarrassing fact that the gentleman who desired to come on board hadn't his wardrobe with him. No, they would rather he died than be saved by them in his nude condition, and finally the yacht freighted with enough sham sentiment and mock modesty to sink it to the very bottom in a mile deep of ocean water, sailed off, compromising between the proprieties and a common humanity by promising to send help from the West End.

It was not the fault of those young women whoever they were, whatever they are, that the man they abandoned did not die before help came, but it is their fault if some honest men and modest women had a lesson in sham purity and pretended innocence and a disgusted affectation of superior refinement and virtue that they will not soon forget.

* * *

But close by St. Joseph, where I live, an event of this kind, only with a more tragic ending, has taken place within

the last few days, not two hundred yards from three members of my own family—two sons and my father-in-law. Such degrading "mock modesty" must be admitted as a reality in this case, anyhow.

* * *

Two young men, one the only support of his mother, the other but recently married, were bathing in Lake Contrary—five miles from St. Joseph. One or other got some injury in diving, or was seized with cramps—whatever was the trouble, one sank, and the other, the younger, was five times drawn down, each time coming back to the surface, and in his struggles rising above it almost to his waist. Each time he rose he called lustily for help, but there was only one boat near enough to have rendered help in time. In that boat were two young men and two—no, one would rather not say they were women—two persons of the female sex. Though the young men were close by, and cannot but have heard the cries of the swimmer, and the shouts of those near enough to see but not, like them, near enough to help—they took no notice, but rowed away from the drowning men, who both consequently perished.

* * *

This was witnessed by dozens, and there was so intense a feeling of disgust and horror that one rather wonders the young men were not tarred and feathered or otherwise maltreated. Yet the shameful fact was concealed, at the instigation doubtless of some of the persons concerned—and one of the St. Joseph papers did not hesitate to accuse of falsehood the editor of a Missouri paper who called attention to the murderous mock modesty of the female occupants of the boat. But, despite this denial, the event really took place as described above. The denial shows, however, that the community is very properly ashamed of the wrongdoing of some who still disgrace it by their presence.

Reviews.

Philip's Handy-Volume Atlas of the World: with complete Index and Statistical Notes. By J. Francon Williams, F.R.G.S. (London: Geo. Philip & Son. 1887. 3*s.* 6*d.* cloth.)—This work is something of a novelty; for with all the good points of an ordinary atlas, together with many more than are usually supplied at the price, the size of the volume (18mo.) gives it its chief utility. The cumbersome quarto is dispensed with, and the book may stand among volumes of ordinary size, or even be carried in the pocket where necessary. This will decidedly recommend it for school uses. There are sixty-four plates containing a hundred and ten maps and plans, and where greater detail is needed a country is mapped in sections. Thus England is shown on five scales—(1) in connection with the world; (2) in Europe; (3) in relation to Scotland, Wales, and Ireland; (4) alone; (5) in three sections. No further detail can be possibly needed in a general way. Plans of chief towns and their environs are given to the number of about forty, and the distinct marking of the railways is much to be commended. At the end of the book is a reference index of about 12,000 names. One of the best features of the book, however, is the table, clearly printed on the back of each map, of the chief features of the district depicted, giving all the particulars as to physical, political, and topographical geography that need be taught or learnt in schools. These tables have been compiled with great intelligence, and, what is rarer, limited by sound discretion. The book is well suited to schools, besides being adapted for private use.

Absolute Relativism. By Wm. Bell McTaggart, late Captain 14th Hussars. Vol. I. (London: W. Stewart & Co.)—Captain McTaggart apparently aims at the production of an eclectic system of philosophy, and occupies his first volume with the destruction of the bases on which materialism and idealism are respectively founded. His dissection of the fundamental propositions of these systems is marked by considerable acuteness, and his success in showing how and where they are respectively unsound is indisputable. Of his constructive capacity we have yet to learn, as the edifice which he is to raise from what he regards as metaphysically unassailable is to be elaborated in a future volume or volumes. Meanwhile he has produced a work of value to the thoughtful student. By the way, either his printer or himself is chargeable with some odd spelling in places. To take a single instance: he heads his preliminary remarks "Prologomena," instead of "Prolegomena," the word being derived from the Greek verb προλέγω; I speak beforehand; and not, as he seems to fancy, from πρόλογος.

The Wood-turner's Handybook. By Paul N. Hasluck, A.I.M.E. (London: Crosby Lockwood & Co. 1887.)—This is the second of the valuable series of mechanical handbooks by Mr. Hasluck now in the course of publication by Messrs. Crosby Lockwood & Co., the first of which ("The Metal-turner's Handybook") we noticed on p. 212. Written by a man personally familiar with the tools he describes, it may be cordially recommended as a most useful work to all beginners in the fascinating art of turning. Explicit and well-illustrated directions are given for making a considerable variety of articles, both useful and ornamental, and the possessor of a lathe will find in its pages material to keep him pleasantly and profitably employed for some time to come.

Screw Threads. By Paul N. Hasluck. (London: Crosby Lockwood & Co. 1887.)—Addressing a somewhat more limited public than the volume reviewed above, this little book, constructed to go into the waistcoat pocket, pretty exhaustively discusses the question of screw threads and screw-cutting generally. It should be in the possession of every metal-turner, engineer, and machinist.

School Hygiene. By Arthur Newsholme, M.D. (London: Swan Sonnenschein, Lowrey, & Co. 1887.)—In nineteen chapters, Dr. Newsholme treats elaborately of school architecture in its sanitary aspect; of mental and physical exercise, diet, dress, rest, and bathing as affecting the health of children; of their eyesight; of the communicable diseases which arise in, or are brought to, schools; and of school accidents and their immediate treatment. Both parents and schoolmasters will find much in the volume before us which is worthy of their most serious consideration.

The Mystery of Gravity, &c. By J. Fraser, C.A. (London: Wyman & Sons. 1887.)—The mystery of gravity is that it is—heat! Last September we reviewed a book in these columns (Knowledge, vol. ix., p. 342) by Mr. Kedzie, in which Mr. Fraser's theory of bodies shielding each other, and so being, as it were, pushed together, was anticipated. Mr. Fraser, alike with Mr. Kedzie, quite ignores the fact that, were his hypothesis true, bodies would attract each other in the proportion of their sectional areas, and not of their masses at all.

History and Work of the Warner Observatory. (Rochester, New York. 1887.)—In the first part of this work Mr. Lewis Swift gives a general description of the observatory and its contained instruments; a list of the winners of the prizes offered for the discovery of comets; a catalogue of nebulæ discovered by the author, and miscellaneous observations of the physical structure of two well-known nebulæ,

and of the tail of the Pons-Brooks comet. The second portion of the book is occupied with the Warner prize essays; the first one by Professor Lewis Boss, on comets, forming a really valuable addition to popular knowledge of those mysterious bodies. This is followed by four on the sky-glows of 1883–84, of which the third, by Mr. H. C. Maine, of Rochester, New York, is the only one really worth the trouble of reading through. The other three are seemingly dependent upon *Nature*, alike for their "facts" and inferences; whence their scientific value may be pretty well estimated.

My First Trigonometry. By M. H. SENIOR. (London: Swan Sonnenschein, Lowrey, & Co. 1887.)—Mr. Senior plunges at once into analytical trigonometry, and, moreover, wastes several pages over the absolutely valueless centesimal measurement of angles; but, despite this, he has produced a remarkably useful little volume. His chapter on logarithms, particularly, is excellent. "Hyp" has apparently dropped out of the first fraction in s. 28 on p. 22.

Practical Solid Geometry. By Major W. G. ROSS, R.E. (London: Cassell & Co. 1887.)—This is an introduction to geometrical drawing on the orthographic projection, as applied to the delineation of a tract of country in its military aspect, of the plan of a fortification, &c. The system of vertical indices is also explained, and contouring touched upon; while the isometric projection and the elementary principles of shading are dealt with more or less fully. To military students who have the advantage of a tutor, Major Ross's small volume will be found valuable; but it will require the most sedulous attention from all who are self-instructed if they are to derive much advantage from it.

Instantaneous Photography for Amateurs. By C. W. (Bath: Charles Steen. 1887.)—This pamphlet contains a description of the "diaphragmatic shutter," in which exposure is effected by the crossing of two apertures between the two members of a camera lens. Its author claims for his arrangement that it admits of the time of exposure being accurately regulated between ·01 second and several minutes.

An Elementary French Grammar. By Dr. V. DE FIVAS, M.A., &c. (London: Crosby Lockwood & Co. 1887.)—Familiar as is the name of Dr. de Fivas in connection with the study of the French language, we naturally expected that an elementary work on that subject from his pen would be well and conscientiously done. Nor have we been disappointed in the perusal of the one before us, inasmuch as the student who thoroughly masters its contents will have laid a very sound foundation for the acquisition of a perfect knowledge of French.

The Bible and the Age. By CUTHBERT COLLINGWOOD, M.A. and M.B. Oxon. (London: T. Fisher Unwin. 1886.)—Yet another specimen of wasted labour and misdirected ingenuity. In writing we convert, so to speak, our immaterial ideas into material signs—signs which possess, and can possess, no identity with those ideas, but in a familiar sense "correspond" with them. Here, then, is the whole mystery of Mr. Collingwood's biblical exegesis. The science of the Bible is no science at all, and its history (where it has any historical basis) is only ancillary to the spiritual lessons taught by it. The man who reads the first chapter of Genesis, in the belief that he is perusing an account of a series of objective facts which really happened, is simply deceiving himself, as the story of the Creation, of the material universe, the appearance of Adam and Eve, and all the rest of it, is myth and allegory pure and simple. Some of the Bible is inspired and some is not. The Gospels and Apocalypse, for example, are in the former category; the Epistles have no claim to inspiration whatever. All this is modestly described on the title-page as "An elucidation of the principles of a consistent and verifiable interpretation of Scripture"!—apparently in the most sublime unconsciousness that the same system might be applied with equal success to demonstrate the Divine origin of the Veda, the Korân, or even of the "Gold Plates" of that lamented prophet the late Joe Smith himself. Of Mr. Collingwood's quasi-Papal dogmatism, and of his curious want of appreciation of the real difficulties which beset men of science in connection with the perfectly definite statements contained in the Bible, it is needless to speak at length. Save for a horrible dread that it would lead to the publication of reams more of such stuff, we would suggest that Mr. Kinns and he should discuss the question of the interpretation of the account of the Creation with which the Bible opens. Who would convert whom would be a matter of very curious speculation indeed.

Cassell's Latin-English Dictionary. Revised, enlarged, and partly re-written. By J. R. V. MARCHANT, M.A. (London: Cassell & Co. 1886.)—When we contrast the volume whose title heads this notice with the Dymock's "Ainsworth" to which lads were condemned in the days of our fathers, we cannot help congratulating the present race of schoolboys upon the appearance of so valuable an aid to an intelligent study of classical Latin as this. Among the excellent features which distinguish Mr. Marchant's book may be mentioned the very numerous quotations from the most familiar Latin authors, illustrative of the different meanings and use of words, the etymologies, and the historical and geographical explanations introduced into so many of the various articles. As a dictionary to aid a middle-form boy at a public school in construing, it would not be very easy to improve upon the one before us.

British Stalk-eyed Crustacea and Spiders. By F. A. A. SKUSE. (London: Swan Sonnenschein, Lowrey, & Co. 1887.)—Yet another volume of the delightful "Young Collector" series, in which Mr. Skuse discourses in an interesting way of those two popularly ill-understood classes of the Arthropoda, the Crustacea and the Arachnida of the British Islands. Surely no intelligent lad or young man can read this little book through without being inspired with a burning zeal to study and collect lobsters, crabs, prawns and spiders straightway. Within its 128 pages will be found a description of the structure, habitat, and manners and customs generally of all the well-established British species of the creatures treated of, with explicit directions for capturing and preserving them for study. No less than thirty-seven well-executed wood-engravings (one containing twelve or fourteen separate figures) illustrate the text, and render easy the identification of any specimen the collector may secure. We neither know, nor pretend to know, anything of publishing in its strictly commercial aspect, but we fail to see how such a work as this can yield a profit at the singularly low price charged for it.

Yussuf the Guide. By GEO. MANVILLE FENN. (London: Blackie & Son. 1887.)—Albeit Mr. Fenn is scarcely at his best in the work before us, he has given us a sufficiently stirring story of the adventures of a sick lad restored to health and strength by a journey in Asia Minor, in company with his two guardians, Mr. Preston, a University professor, and an altogether impossible lawyer, Mr. Burne. In Smyrna they pick up Yussuf, who subsequently acts as their guide through the wild country which they explore: a Turk so grave, patient, brave, resourceful, and gentlemanlike that he may well have been drawn from the life. The account of the escape of the party, together with another Englishman and his wife from the mountain fastness of the brigands, who are holding them for ransom, will be read

XUM

straight through by every boy without laying the book down.

Of school books on our table we have *Moffatt's English Grammar* (London: Moffatt & Paige), suitable enough for ordinary middle-class schools and Civil Service examinations; and *Cassell's Combination Test-Cards* (London: Cassell & Co.), consisting of packets of cards containing arithmetical questions up to the Seventh Standard. If we admit the necessity of teaching the more recondite branches of arithmetic to children who have to earn their bread by daily labour, these cards seem well adapted to their purpose. For ourselves, we should regard the time as much better employed in instructing the boys how to dovetail pieces of wood, and the girls to scrub out a room or cook potatoes.

THE FACE OF THE SKY FOR AUGUST.

By F.R.A.S.

THE student will, of course, watch the sun for the spots which have begun to appear on the sun after a protracted period of quiescence. During the early morning of August 19 there will be a total eclipse of the sun, but only the end of it will be visible when the sun rises (in, and in the neighbourhood of, London) in the E.N.E. at 4h. 53m. A.M. At this time the effect presented will be that of a small black semicircular notch cut out of the S.E. part of the sun's disc. The eclipse will end at 5h. 6·7m. A.M., so that scarcely anything of the phenomenon will be seen in Great Britain. The aspect of the night sky is shown in map viii. of "The Stars in their Seasons." Shooting stars should be looked for on the night of August 10. Watch may, in fact, be kept on those immediately preceding and following it. Mercury is a morning star throughout the month, and attains his greatest western elongation (18° 36′) in the evening of the 16th. He may be caught by the naked eye about the middle of the month before sunrise to the north of east, near the horizon. Venus is an evening star all through August. She attains her greatest brilliancy on the 16th, and about that date may be seen with the naked eye in bright sunshine by anyone who knows exactly where to look for her. In the telescope she looks like the moon when about four days old, and is a lovely object. Jupiter is low down in the west in Virgo, and is only fairly visible at all early in the month. Saturn, Uranus, and Neptune are one and all invisible. The moon is full on the 3rd at 8h. 40·1m. in the evening, enters her last quarter at 11h. 36·5m. P.M. on the 11th, is new at 5h. 38·6m. A.M. on the 19th, and enters her first quarter at 8h. 21·2m. in the evening of the 25th. There will be a partial eclipse of the moon during the afternoon and evening of the 3rd, but at no time will more than ·419 of the moon's diameter be obscured. When the moon rises in London at 7h. 35m. P.M., she will already be immersed in the earth's penumbra, and her first contact with our shadow will be just beginning. The middle of the eclipse will happen at 8h. 48 9m. P.M.; the second contact with the shadow at 10h. 2·1m.; and the last contact with the penumbra at 11h. 25·9m. P.M. Five occultations of fixed stars by the moon will occur during August at hours more or less convenient to the ordinary amateur observer. On August 8, 26 Ceti, a star of the 6½th magnitude, will disappear at the moon's bright limb at 11h. 57m. P.M., at an angle of 105° from her vertex. Its reappearance will happen at 1h. 2m. the next morning at the dark limb of the moon at an angle from her vertex of 240°. On the 22nd, 65 Virginis, of the 6th magnitude, will disappear at the moon's dark limb at 8h. 34m. P.M., at an angle of 92° from her vertex. She will have set before it reappears. On the 27th, B.A.C. 6081, of the 6th magnitude, will disappear at the dark limb at 5h. 59m. P.M. at an angle of 51° from the vertex of the moon, reappearing at her bright limb at 7h. 14m. P.M. at a vertical angle of 277°. On the 28th, ξ^1 Sagittarii, a star of the 6th magnitude, will disappear at the dark limb at 6h. 54m. P.M. at a vertical angle of 36°, its reappearance at the bright limb of the moon happening at 7h. 56m. at an angle of 304° from her vertex. Lastly, on the 31st, 45 Capricorni will disappear at the moon's dark limb at 15 minutes after midnight at an angle from her vertex of 108°. Its reappearance will not happen until between 1h. and 2h. A.M. on September 1. At noon on August 1 the moon is in Sagittarius ("The Seasons Pictured," plate xxi.), which she quits for Capricornus at 10 P.M. on the 2nd. She remains in Capricornus until midnight on the 4th, and at that hour enters Aquarius. Her passage through this last-named constellation occupies until 2h. A.M. on the 7th, and she then passes into Pisces ("The Seasons Pictured," plate xxii.), in which great straggling constellation she is travelling until 7h. 30m. A.M. on the 10th. She then arrives at the boundary of the most northerly part of Cetus, and when she has traversed this, at 5 o'clock the next morning, she enters Aries ("The Seasons Pictured," plate xxiii.). At 2h. 30m. A.M. on the 12th she passes out of Aries into Taurus. Travelling through Taurus, we find her at 11h. P.M. on the 14th on the confines of the northern prolongation of Orion. She passes through this in 11½ hours, and emerges in Gemini. Her journey through Gemini is completed by 4h. A.M. on the 17th, when she crosses into Cancer ("The Seasons Pictured," plate xxiv.). Here she remains until 2h. 30m. in the afternoon of the 18th, at which hour she enters Leo. She leaves Leo for Virgo at midnight on the 20th ("The Seasons Pictured," plate xxv.); and Virgo, in turn, for Libra at 9h. P.M. on the 23rd ("The Seasons Pictured," plate xxvi.). The course of her journey over Libra brings her, at 4h. 30m. P.M. on the 25th, to the western edge of the narrow northern strip of Scorpio, through which she has passed by 1h. 30m. next morning, and come out in Ophiuchus. At 6 P.M. on the 27th she quits Ophiuchus for Sagittarius. She is travelling through Sagittarius until 4h. A.M. on the 30th, and then leaves it and enters Capricornus ("The Seasons Pictured," plate xxi.). She is still in Capricornus at midnight on the 31st.

An extraordinary mistake, or misprint, appears in "The Face of the Sky for July," where the occultation of Aldebaran by the moon, which really occurred at 3h. 16m. in the early morning of the 17th, is announced to happen in the afternoon! of that day; and "bright sunshine" is printed for "bright twilight."

Our Whist Column.

By "Five of Clubs."

MATHEWS ON WHIST.

(Rearranged, partly rewritten, and occasionally corrected in accordance with modern views.)

PLAY SECOND HAND—*continued.*

IF you are strong in trumps, and have the Ace, King, and two more of your right-hand adversary's lead, there are two ways to play:—Either pass it the first time, or else put on the Ace, and play the suit on to force your partner. If weak in trumps put on the Ace, but do not continue the suit. [In modern play the King would be the right card to put on. Moreover, in some cases, you would not, when strong in trumps, follow either of the courses here suggested, but play the King and lead trumps. Even if weak in trumps, it would sometimes be well, with such command in one adversary's suit, to lead trumps, after playing the King. Especially if your partner had declared strength in another plain suit, while you had protection in the third.]

Holding Ace, Knave, ten, and a small card of the suit led by your right-hand adversary, it is best in trumps to play the ten, the small card in plain suits. For in trumps a good player with King, Queen leads the lowest; in other suits the King. Thus in the latter case an honour is certainly behind you [that is, either on your left or with your partner], and in whichever hand it may be, you can do no good by putting on the ten. By keeping the three together, you make it impossible for your adversary to get one trick in the suit [if your partner holds the honour, while the adversaries can make but that trick if the one on your left holds it and returns trumps]. [If, however, you have an established long suit, and no re-entering card in plain suits, it is better to play the small card even in trumps; for this reason, that you thus have a better chance of making the last trick in trumps and bringing in your long suit. It is to be remembered that though the lead of a small trump is made by good players from King, Queen, and others, it does not necessarily imply that the trump leader holds both King and Queen, even though you hold Ace, Knave, ten, and another. On the contrary, it is rather more probable that he does not than that he does.]

There are situations where even good players differ. If a Queen is laid on your right hand, and you have Ace or King, and two small ones, you should certainly cover the Queen. But if you have Ace or King, ten, and a small one, it is better to pass the trick, for after passing you remain with the major tenace if your partner take the trick with King or Ace, and the original leader cannot make a trick in the suit. If you had covered, he must have made a trick (apart, of course, from ruffing), as he would lie with minor tenace against

the major tenace between you and your partner—assuming the King or Ace with your partner. If your partner has the Knave, passing the Queen loses a trick; but the odds are greatly against this. [If the lead has been from four cards, leader cannot have followed the accepted principles of play if as second place you hold ten; for these only allow the lead of Queen from Queen, Knave, ten, &c., except in cases of emergency, when Queen may sometimes be led from Queen, Knave, nine. The play also in the case considered would depend partly on the score and on your strength in trumps.]

Play Second Hand, Second Round.

It frequently happens that the adversary on the right hand, having won his partner's lead with the Ace or King, returns the Knave. In this case do not put on the Queen, as the probability is that, if you play a small card, third player will not finesse, but play the best if he hold it. On all such occasions, however, play without hesitating, lest you should direct a skilful adversary to an advantageous finesse.

If your right-hand adversary wins, and returns his partner's lead, should you hold the best and a small one, play the small one. Third player will probably finesse (if holding the second and fourth best, or second best to fourth best led), so that if your partner has the third best he will probably make it. If your adversary on the left is a bad player, however, I would not advise this; for bad players never finesse when they ought to. [If you are weak in trumps it is unsafe to venture on underplay of this sort, unless it is done in order to retain command in the one suit of which you are afraid, for which purpose it is sometimes the most prudent course.]

Play Third Hand.

Win with the lowest of a sequence to show your strength in your partner's suit. [In modern whist it is considered best to play the lowest (if any card) of a sequence to a trick, alike to the lead of an adversary and to a partner's lead, save on those rare occasions when underplay is proper; but, as will be seen under that head, Mathews considers it often desirable to keep the adversary in ignorance, in his own suit, by playing the highest of a sequence.]

If your partner leads the nine or ten, and you have an honour with only one small card, put on the honour. If with the honour you hold two or more small ones, do not put on the honour. If you hold Ace, whether with one small card or more, put on the Ace invariably, for it is better that your partner should finesse in his own suit than you.

When your partner leads a card of which you have the best and third, and your right-hand adversary puts on the fourth, the second only remaining, it is a commonly received but erroneous opinion that the chance of succeeding in the finesse is equal to the chance of failing; but calculation will show that as the last player has one card more than his partner, the chance is in corresponding proportion in favour of the second best lying with the fourth player. For example, if second and fourth players held each of them three cards, the odds will be three to two against the finesse succeeding.

[The play of the fourth best second in hand is, however, in itself suggestive either of shortness in the suit, or of finesse. If the fourth is the lowest of two, the other is of course the second, and your finesse is safe. If fourth player holds no more, then your finesse is useless if your partner holds second best, and a failure if fourth player holds it—the next round being probably ruffed. Regarded as a matter of probabilities, note that the play of fourth best, by showing that a number of small cards in the suit lie between the fourth player and your partner, diminishes the probability that second best lies on your left. On the whole, it is best to play the third best, unless a single trick is wanted to save or win the game or make a particular point.]

[Mathews does not consider specially the case of Ace, Queen, with or without others, here or anywhere else. We may safely conclude from his silence that the finesse of the Queen, except where one trick wins or saves the game or a point, was regarded in his time as too obvious to need enforcing. It is clear from his remarks on the finesse that he would not have had any doubt as to the propriety of the course now customarily adopted. The cases immediately following clearly show this. In fact, players finessed more boldly in Mathews' day than they do now.]

With Ace, Knave, and another, finesse the Knave to your partner's suit if strong in trumps; but, otherwise, play the Ace. In trumps, with Ace, Knave, and another, it is always right to finesse the Knave to your partner's lead.

[The finesse of the Knave is decidedly wrong, both in trumps, and with a plain suit whether you are strong or weak in trumps. In every case, play the Ace and return the Knave; you will save five tricks in the long run by pursuing this course for two that you will lose.]

If your partner leads ten, and you hold Ace, Knave, and another or others, pass the ten invariably—unless one trick saves or makes the game or a particular point.

If your partner leads the Ace and Queen of a suit, of which you have the King and two others, win his Queen that you may not stop his suit. [Leading Ace, then Queen, indicates the Knave in reserve; but before the distinction was adopted of leading the Queen second if with no more than four in suit, and the Knave if with five or more, Mathews' rule of covering the card led from the remaining top sequence was too absolute. It would be wrong, for instance, if your partner had shown such strength in trumps or plain suits that you could feel sure of his re-entering. For by taking his Queen you may leave his long suit protected in the adversaries' hands, where by passing, you and he are able to take out four rounds in the suit certain. This applies to our modern play of the Knave: there are cases when the King should not be played, precisely *because* the lead of the Knave indicates length in the suit—though usually the Knave calls for the King.]

If your right-hand adversary "calls" for honours, and your partner leads through him, if you hold Ace or King with nine and a small one, you should finesse the nine.

[This is one of the few rules given by Mathews which applies specially to long whist. In short whist the occasion for this finesse arises if your right-hand adversary, especially if he has turned an honour, calls for trumps. Because then your partner, leading through him notwithstanding the call, shows such strength that the finesse of the nine is probably safe. It is better, though, from Ace, nine, than from King, nine. In either case, if the nine makes, lead the high card at once; it is the best way of helping your partner against the enemy's trumps, which lie weak on his right, strong on his left.]

If, after ten tricks have been played, there remains one entire suit [save for a solitary discard], and your partner lead, you holding King, ten, and another, your play must depend on the position. If you have made five tricks, or otherwise need two for a particular point or to save or win the game, put on the King. But if you have made six, or need but one more point, you can make sure of it thus:—If your right-hand adversary put on an honour, win it [you thus remain with the second best guarded]; if he plays a small one, put on the ten [and still you remain with guarded second best].

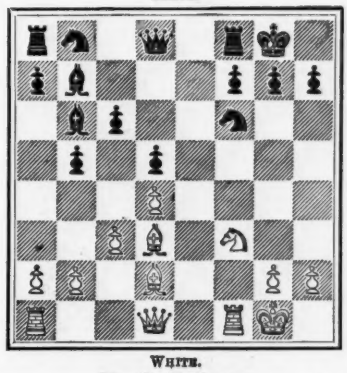
Our Chess Column.

By "Mephisto."

ENDINGS FROM ACTUAL PLAY.

A singularly ingenious termination of a game, wherein White had given the odds of a Knight.

Amateur.
Black.



White.
Mr. F. H. Lewis.

White proceeded as follows:—

Kt to Kt5	P to KR3
R × Kt	

The first of a series of brilliant moves. If Black play either P × R or P × Kt, White would reply with Q to R5, and would soon obtain a mating position.

	Q × R
Kt to R7	Q to R5
Q to B3	

Following up the attack, and better than Kt × R, if Black play R to Ksq, White would continue with R to KBsq, &c.

	Kt to Q2
P to KKt3	Q to K2
R to Ksq	Q to Qsq
Q to R5	Kt to B3

This looked a likely move.

Q to B5

Very good! Threatening Kt × Kt (ch) and Q to R7 mate.

Kt to Q2

Curiously enough, there is nothing better but to retire.

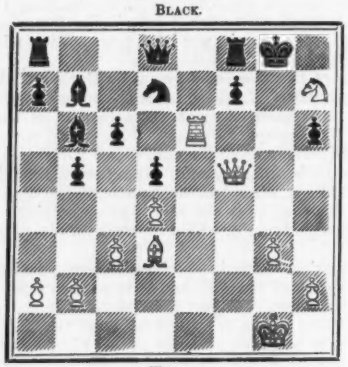
B × P! P × B

If Black play anything else, his general prospects would not improve much—*i.e.*, P to Kt3. Q to R3, and if K × Kt, B to Kt5(ch)!

R to K6!

AMATEUR.

BLACK.



WHITE.

MR. F. H. LEWIS.

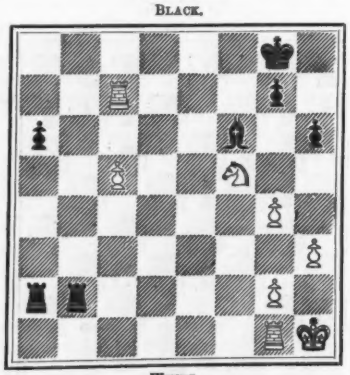
A most remarkable combination of brilliant moves that do not often occur in actual play.

	P × R
Q to Kt6 (ch)	K to Rsq
Kt to Kt5!	Q to K2
Q × P (ch)	K to Ktsq
B to R7 (ch)	K to Rsq
B to B5 (ch)	K to Ktsq
B × P (ch)	Resigns.

Another curious ending played by the same player: –

AMATEUR.

BLACK.



WHITE.

MR. F. H. LEWIS.

The game terminated as follows:—

White.	Black.
	R to Kt6

Played, no doubt, in the hope of bringing about a surprise mate by means of B to K4, followed by R × RP (ch).

R to Ksq.

This is an attacking as well as a defensive move.

P to QR4

Kt × P (ch)

Black intended to surprise his opponent, and did not therefore expect to be attacked himself.

	K to R2
Kt to B5	P to R5
Kt × P	

A brave and captivating Knight!

B × Kt

It is plain that White can equally win if Black does not take the Knight.

KR to K7	R to Kt8 (ch)
K to R2	R (Kt8) to Kt7
R × B (ch)	K to R3

Black was mistaken in believing that this would give him a better chance for escape than K to R sq.

K to Kt3!

Good! If R to R7 (ch), Black escapes *viâ* K to Kt4.

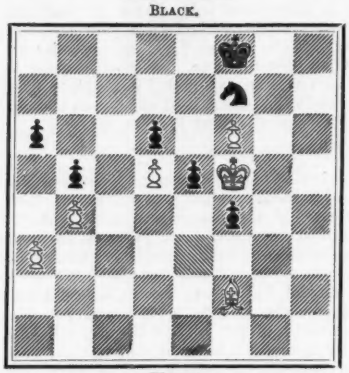
R × P (ch)

K to R4	Resigns

End position in the fourteenth game of the match Blackburne *v.* Zukertort:—

BLACKBURNE.

BLACK.



WHITE.

ZUKERTORT.

Black won as follows:—

	Kt to R3 (ch)
K to Kt6	K to B2

A very subtle manœuvre, which forces the game. If White, instead of taking the Kt, would play anything else, say B to R4, Black wins by Kt to Kt sq. K to B5, P to B5, and Black, by giving up his BP, obtains both the White P's on B6 and Q5, remaining with two passed Pawns ahead.

K × Kt	K × P
K to R5	K to B4
B to R7	P to K5
K to R4	P to K6
K to R3	K to K5
K to Kt2	P to B6 (ch)
K to Kt3	P to B7
K to Kt2	K to Q6
Resigns	

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